

AUGUST 3, 1959

# PURCHASING

The Methods and News Magazine for Industrial Buyers

*Buying for the Space Industry*

page 59

**End the  
Typing  
Bottleneck**

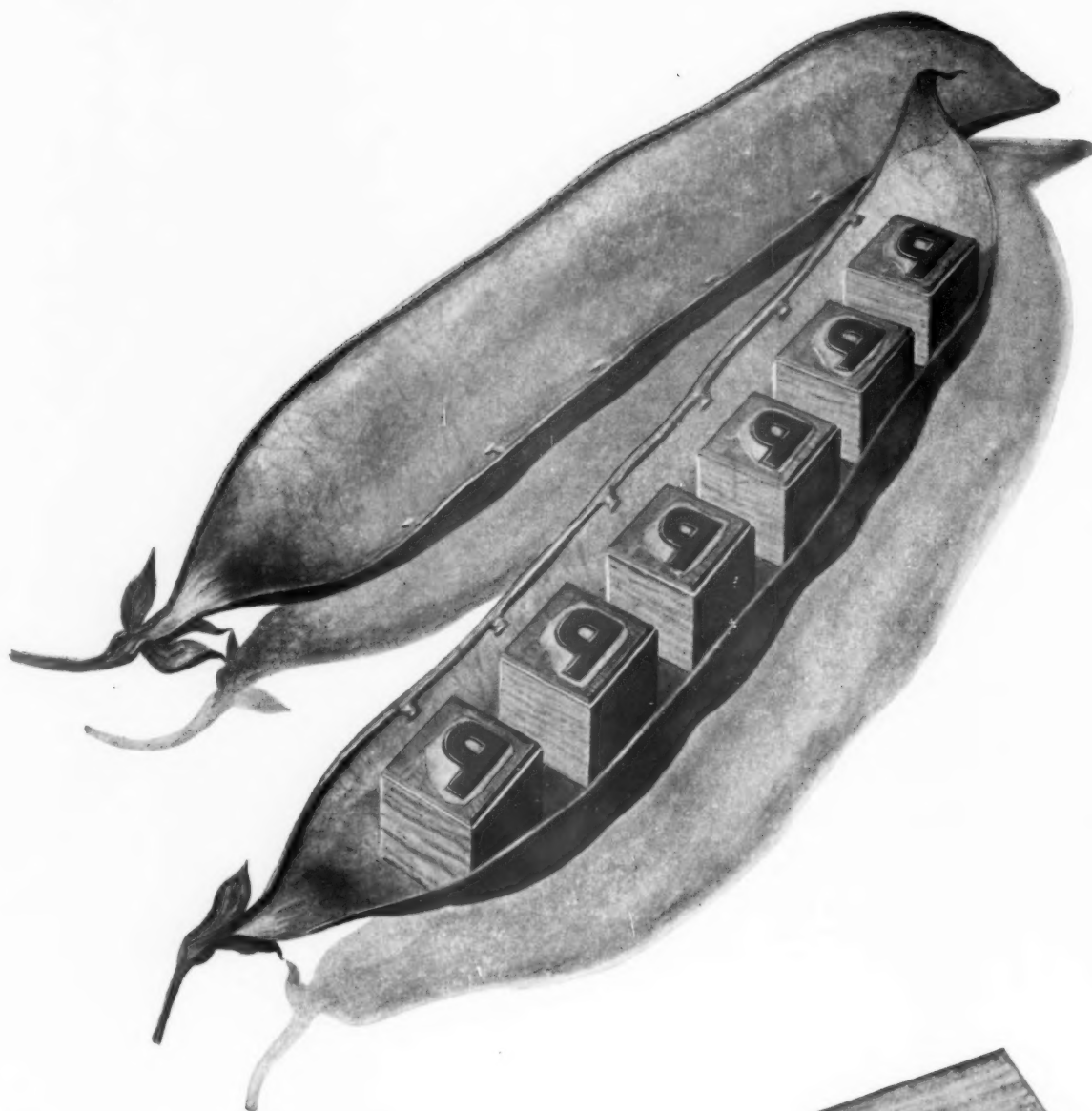
page 64

*Can You Measure*  
**BUYER PERFORMANCE?**

page 68

*Warranties in Purchase Contracts*

page 72



## Like P's in a Pod...

Today, not only P's, but A's and B's, words and pictures too, leap into print miles apart looking *exactly* alike. *Duplicate* printing plates turn the trick, but these chunks of heavy metal take muscle and money to ship and handle.

Now work for both postman and printer is lighter thanks to printing plates made with Shell Chemical's tough Epon® resin. Only a third as heavy as metal-backed plates, they slice mailing costs 40% to

65%. And because Epon resin does not warp the fragile printing image it supports, there's less risk of distortion. Epon resin-backed plates whirl through two million impressions without showing appreciable wear.

✓ ✓ ✓

With Epon resin to replace heavy metal in printing plates, Shell Chemical helps lighten the task of spreading knowledge in print.



## Shell Chemical Corporation

Chemical Partner of Industry and Agriculture

NEW YORK

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## You can tell the **SKF** man by his complete line of bearings!

He can promptly fill your requisitions for both ball and roller bearings—for many thousands of sizes. No one else offers such a variety!

Besides this big selection, he offers his personal experience with countless bearing

applications . . . *plus* the services of versatile application engineers and bearing designers in the home office of **SKF**.

Why not speed up your bearing orders by calling him today?

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Spherical, Cylindrical, Ball, and **Tyson** Tapered Roller Bearings

EVERY TYPE—EVERY USE

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**B.F. Goodrich**

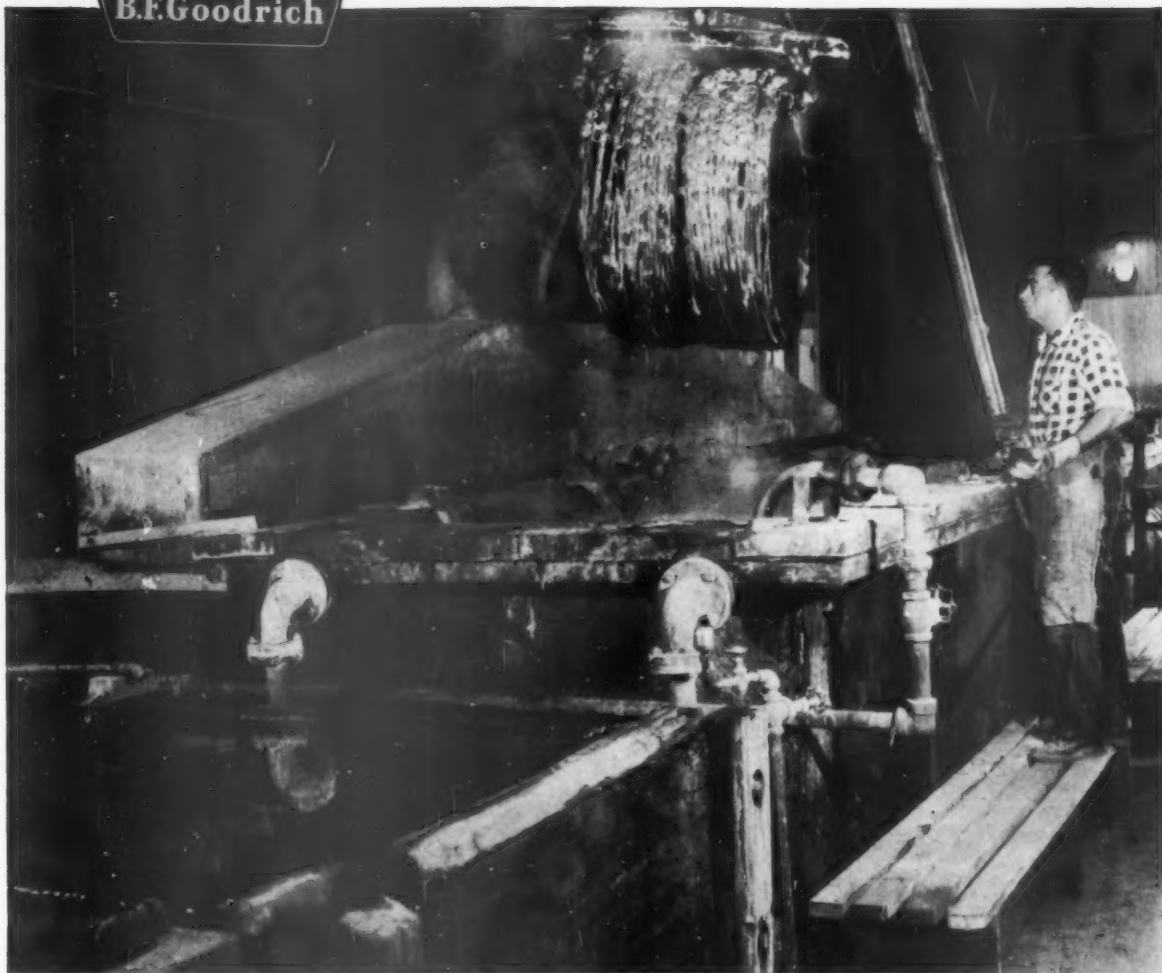


Photo courtesy Atlas Tack Corporation, Fairhaven, Mass.

## 1400-gallon cup of hot acid

### *B.F. Goodrich improvements in rubber brought extra savings*

**F**OR many years, this job of cleaning rust and scale off coils of steel rods was done in tanks made of thick cypress planks. But tanks shrunk under the bite of hot acid, had to be calked and patched frequently, and were lasting only about a year.

A leakproof tank seemed impossible until B.F. Goodrich engineers came up with something entirely new in the way of a protective lining. They developed a combination lining of hard rubber sandwiched between layers of soft rub-

ber that stands the most corrosive acids. This B.F. Goodrich "Triflex" lining, as it is called, is permanently attached to a steel tank, then protected from excessive heat, rips and tears by a sheathing of brick.

The waste and hazard of acid leaks stopped wherever this B.F. Goodrich lining was used. The tanks in the picture were lined by this method 10 years ago. Since then they've been in use 16 hours a day, have required virtually no repairs or maintenance. The company

figures that in terms of useful service each tank has only cost them about 50¢ a day.

In the past 35 years, B.F. Goodrich has rubber lined thousands of tanks to handle acids and other corrosives. Some are still in use; others lasted 15 or 20 years. Not one ever failed to end costly shutdowns for repairs. When you specify tank linings, remember that the true cost is the price divided by the years of satisfactory service. On that basis, your cost will be lowest when you specify B.F. Goodrich. *B.F. Goodrich Industrial Products Co., Dept. M-642, Akron 18, Ohio.*

# **B.F. Goodrich** *industrial rubber products*



*The smoother surface of*  
**CONTOUR-WELDED\***  
**STAINLESS TUBING**  
*gives it greater resistance to corrosion*

Recent tests prove: (1) Contour-welded tubing is smoother than any other tubing, and (2) this extra smoothness provides greater resistance to corrosion.

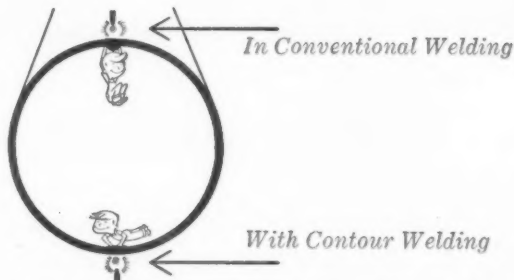
Here's how TRENTWELD® tubing, made by the exclusive Contour-Weld process, compares with other full-finished tubing:

- It's smoother than seamless because it's formed from uniformly rolled strip steel, whereas seamless is extruded from a billet.
- It's smoother than other welded tubing because the Contour-Weld process, patented by Trent, virtually eliminates the weld bead.

Other tests prove this smoother surface provides *increased resistance to corrosion* — because there are fewer focal points for corrosive attack. Not only that, the smoother surface ensures *longer fatigue life* and *less product incrustation*.

But get full details. Our free 48-page "Trentweld Manual" gives complete data on Contour-Welded tubing in sizes from ½" to 40" O.D., in stainless and high alloy steels, titanium, zirconium, zircalloy and Hastelloy.† Write: Trent Tube Company, Box 2518, Pittsburgh, Pa.

†Trademark Haynes Stellite Co.



In CONVENTIONAL WELDING of tubes, gravity pulls the molten metal down to form a bead that is difficult to remove by cold working. And cold working may lead to undercuts, focal points for fatigue cracks and corrosive attacks. Cleaning becomes difficult.

\*With CONTOUR-WELDING the tube is welded at the bottom. Gravity still pulls the molten metal down inside the tube, but now the weld area corresponds to the contour of the tube. There's virtually no weld bulge on the inside surface. And even on the O.D., the weld seam more closely conforms to the contour of the tubing.



*stainless and high alloy pipe and tubing*  
**TRENT TUBE COMPANY**

Subsidiary of Crucible Steel Company of America • GENERAL OFFICES: East Troy, Wisc. • MILLS: East Troy, Wisc.; Fullerton, Calif.

For More Information Write No. 156 on Inquiry Card—Page 32

# PURCHASING

The Methods and News Magazine For Industrial Buyers

AUGUST 3, 1959  
VOLUME 47, No. 3

B. P. MAST  
Chairman of the Board

B. P. MAST, JR.  
President

RAY RICHARDS  
Publisher

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# Held down "impossible" job for months vs. days

They were asking the "impossible" at this big West Coast mine. The hose used in their big beneficiation plant must be tough enough to handle the flow of murderously abrasive iron-ore slurry. Yet it still must be flexible enough to follow a twisting, bending course down from the top of the seven-story structure.

So it's little wonder their first hose sprang numerous leaks almost immediately — was finished completely in about 45 days. It wasn't until the G.T.M. — Goodyear Technical Man — recommended his special ore-carrying hose that they got satisfactory service.

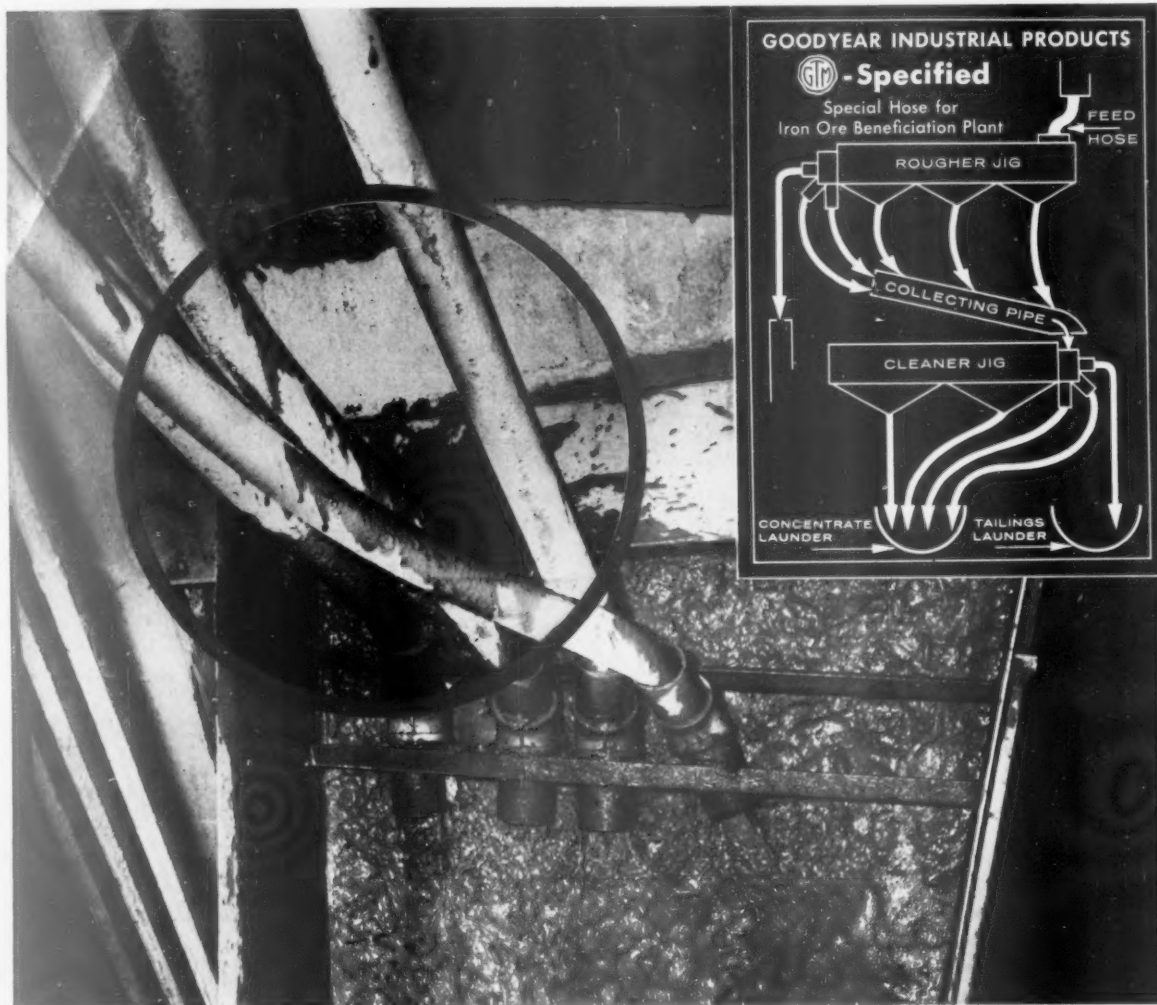
In fact, the G.T.M.'s hose has been so successful that the company's purchased over 4,000 feet of it to date.

It's been on the job over 12 months now — completely mastering this extra-tough job.

So once again, the G.T.M. has proved that the "impossible" often boils down to right hose — and the right recommendation. Make sure you get both — by contacting your Goodyear Distributor — or writing Goodyear, Industrial Products Division, Akron 16, Ohio.

• • •

**IT'S SMART TO DO BUSINESS** with your Goodyear Distributor. He can give you fast, dependable service on V-Belts, Hose, Flat Belts and many other industrial rubber and non-rubber supplies. Look for him in the Yellow Pages under "Rubber Goods" or "Rubber Products."



HOSE FOR ALL INDUSTRY BY

# GOOD YEAR

THE GREATEST NAME IN RUBBER

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## Purchasing Previews

### Straws in the Trade Wind

► **CONSUMING MORE POWER**—Industrial power consumption is rising steadily. Last year, industry used 372 billion kilowatt hours. In 1963, says Westinghouse Electric Corporation, industrial consumption will be 506 billion KWH. And by 1968, it will hit 667 billion KWH.

► **COUNTERATTACK**—Industry is fighting back against the rising tide of foreign imports into this country with strong public education programs. A good example is the campaign now being waged by Wolverine Tube. The company has published a number of booklets—that describe the seriousness of the import problem in everyday language—for distribution to its wholesalers, contractors, customers, and friends. Other companies are adopting similar methods to tell their story to the American public.

► **MATERIAL HANDLING BOOMING**—Orders from purchasing agents for material handling equipment are at the highest level in 33 months. According to the latest report of the Material Handling Institute, the index stands at 164.45 (1954=100).

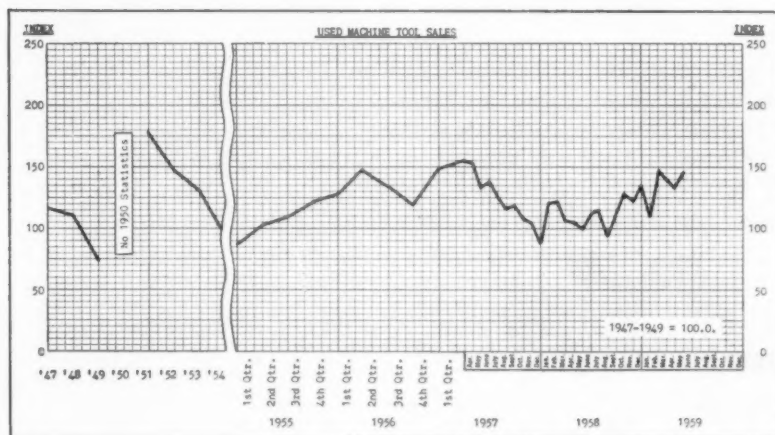
► **BOOSTING THE COMPETITION**—One possible aftermath of the steel strike: more

#### For the P.A.'s Hot File . . .

If you find yourself short of steel despite the strike warnings voiced throughout the first half, here's a tip that might help you: see if other purchasing agents in your area have any excess supplies. Some P.A.'s have laid in enough steel to carry them through a six month strike—which hardly seems likely at this point. And there are reports of some smaller steel fabricators being heavily overloaded with raw material. Their need for cash may force them to liquidate some of this inventory.

sales for competing materials—like aluminum and plastics. If the steel companies raise prices as a result of wage increases, many buyers may turn to alternatives. Some companies that use a lot of steel have already designed new products using other materials. They're just waiting for the right economic moment to go into production.

► **ULTRASONIC SOLDERING** — Soldering aluminum has always been a problem because of the thin layer of oxide that covers the



Orders from purchasing agents for used machine tools have been on an upward trend recently, says the Machinery Dealers National Association. The association predicts a slight gain this year in sales of used tools over the mark set in 1958.



## CASE HISTORIES



Photo: Courtesy Jacobsen Mfg. Co., Racine, Wisconsin

### ***N/D Ball Bearing Design Helps Cut Power Mower Costs \$4.29 Per Unit!***

#### **CUSTOMER PROBLEM:**

Require bearing design that will help reduce production costs of power mower without affecting mower's high quality and performance.

#### **SOLUTION:**

N/D Sales Engineer, working with company engineers, recommended a new, more efficient cutter housing design utilizing three precision New Departure production double row ball bearings. These high capacity dual purpose

bearings resist heavy radial and thrust loads in any combination. The conversion accounted for a parts and assembly-time cost savings of \$4.29 per mower. In addition, the manufacturer is able to promise mower users years of trouble-free performance, while pricing more competitively at retail!

Perhaps there's a New Departure production ball bearing that will help lower costs and add new sales appeal to *your* product! Why not call on New Departure today? For more information write Department V-8.

*Replacement ball bearings available through United Motors System and its Independent Bearing Distributors*



DIVISION OF GENERAL MOTORS, BRISTOL, CONN.

NOTHING ROLLS LIKE A BALL

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### Straws in the Trade Wind

metal and its alloys. This layer has to be removed before any soldering can be done. In Switzerland, ultrasonic soldering is now being used. High frequency vibrations are transferred to the aluminum during application of the solder, bursting the oxide layer. A big advantage: there's no need for any chemical fluxing agent in the process.

► **AUTO SALES RACING AHEAD**—In the first half, 2.9 million automobiles were sold in this country—a 33% hike over the same period last year. This includes 300,000 foreign cars. It looks like 1959 will be a 6 million car year—of which about a half million will be imported models.

► **PAPER PRODUCTION PROSPECTS**—Production of paper will hit a new record this year, says Standard & Poor's. Output should be greater than the 1956 peak of 14 million tons. Demand from paper buyers has been quite brisk thus far in the year.

► **GRAY IRON UPTURN**—1959 sales of gray and ductile iron castings will be 30% higher than last year. So says the Gray Iron Founders' Society. Shipments this year are forecast at 13.5 million tons, up from 10.4 million tons in 1958.

► **LOWER PRICES**—Purchasing agents will be paying less for (1) adding machines and (2) fluoroalcohols. Victor Adding Machine Co. reduced prices on one line from 12% to 28%. And DuPont Co. is now selling fluoroalcohols at \$10 a pound. Development prices a year ago ranged from \$30 to \$40 per pound.

► **ON YOUR OWN**—Do you ever get the urge to pack in your job and start a business of your own? If so, remember this: in the eight year period between 1951 and 1958, three million businesses were started. But, says the Department of Commerce, two and a half million firms went out of business during the same period. Most of these new businesses were in the service and construction industries.



Roy C. Ingersoll

### QUOTE! .....

The urgent need for business leadership in politics has been underlined by Roy C. Ingersoll, chairman of Borg-Warner Corporation. "The business executives of this country have demonstrated their qualifications for leadership," says Mr. Ingersoll. "Now it is time that they become fully aware of the impact of politics upon the operation of our free enterprise system." He believes that "businessmen cannot stand aside saying 'this is politics and we are businessmen, so we will let the politicians do it.'" He exhorts all businessmen to "lose no opportunity to explain and interpret the operation of our businesses—and the operation of our private enterprise system—to our employees and to the public and to candidates for office."





## THE COLORADO FUEL & IRON CORP. CUTS GLOVE COST 48% WITH

# Riegel

## Mighty-Scraper™ Gloves

More on-the-job proof! Riegel's Mighty-Scraper glove replaced two different all-leather gloves at Wickwire-Spencer Steel Div. Result: *equal wear at half the price!*

"In addition," says Mr. George A. Simmons, Supt. of Stores, "We like Riegel's free slogan imprinting, and are gratified at the strong acceptance of these colorful gloves by our men."

Mighty-Scraper comfortably combines leather palm and thumb with a wear-resistant Riegel Plastic Dot™ fabric back. It's one more example of Riegel's ability to save for *you* by fitting the right glove to the job. Over 400 styles and materials. Write today.

**ASK FOR FREE CATALOG**

**RIEDEL TEXTILE CORPORATION • Conover, N. C.**

Welding operator at C.F. & I. wire mill uses Riegel No. 95542, heavy-duty leather palm



Men handling refractory brick at C.F. & I. get longer wear with Mighty-Scraper



## HOW FOUNDRY SAVES \$90 PER MAN WITH

# Riegel

## Special-Purpose Gloves

Here's on-the-job proof! No matter how special your needs are, Riegel has the *right* glove. This large midwest foundry switched from leather-palm gloves to Riegel's specialized Hot Press gloves for handling hot castings. They paid 15% more per pair, but got 87% more wear! \$90 saved every year for every man!

The men prefer Riegel's added roominess and the thick, wool-content lining that gives better heat protection and longer wear. Riegel's wing thumb adds flexibility.

Riegel offers *you* over 400 different styles and materials...expert advice by industrial specialists...8 warehouses to speed deliveries. Write today.

**RIEDEL TEXTILE CORPORATION • Conover, N. C.**

Hot Press Gauntlet: leather index finger, tips and strap.

**ASK FOR FREE CATALOG**

Special-purpose all-leather gauntlet. Full hand protection.





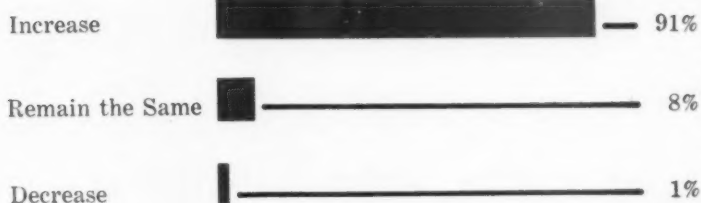
# PURCHASING OPINION

## What's the Price Outlook

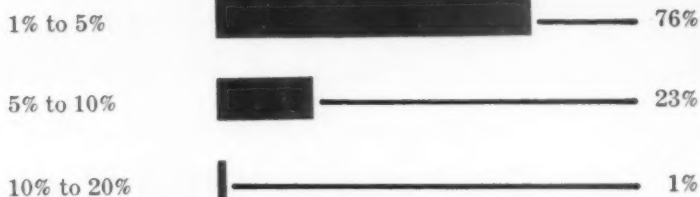
### For the Second Half?

As always, the pressure will be on purchasing during the second half to keep prices down. But the P.A.—who acts in many cases as his company's staff economist—knows that he cannot always prevent price increases from suppliers. We asked a representative cross-section of purchasing agents a number of questions about the second half price outlook. Their combined answers follow:

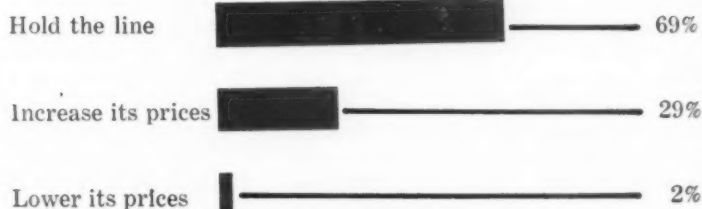
1. Compared with the first half ?  
of 1959, do you expect  
prices in the second half to:

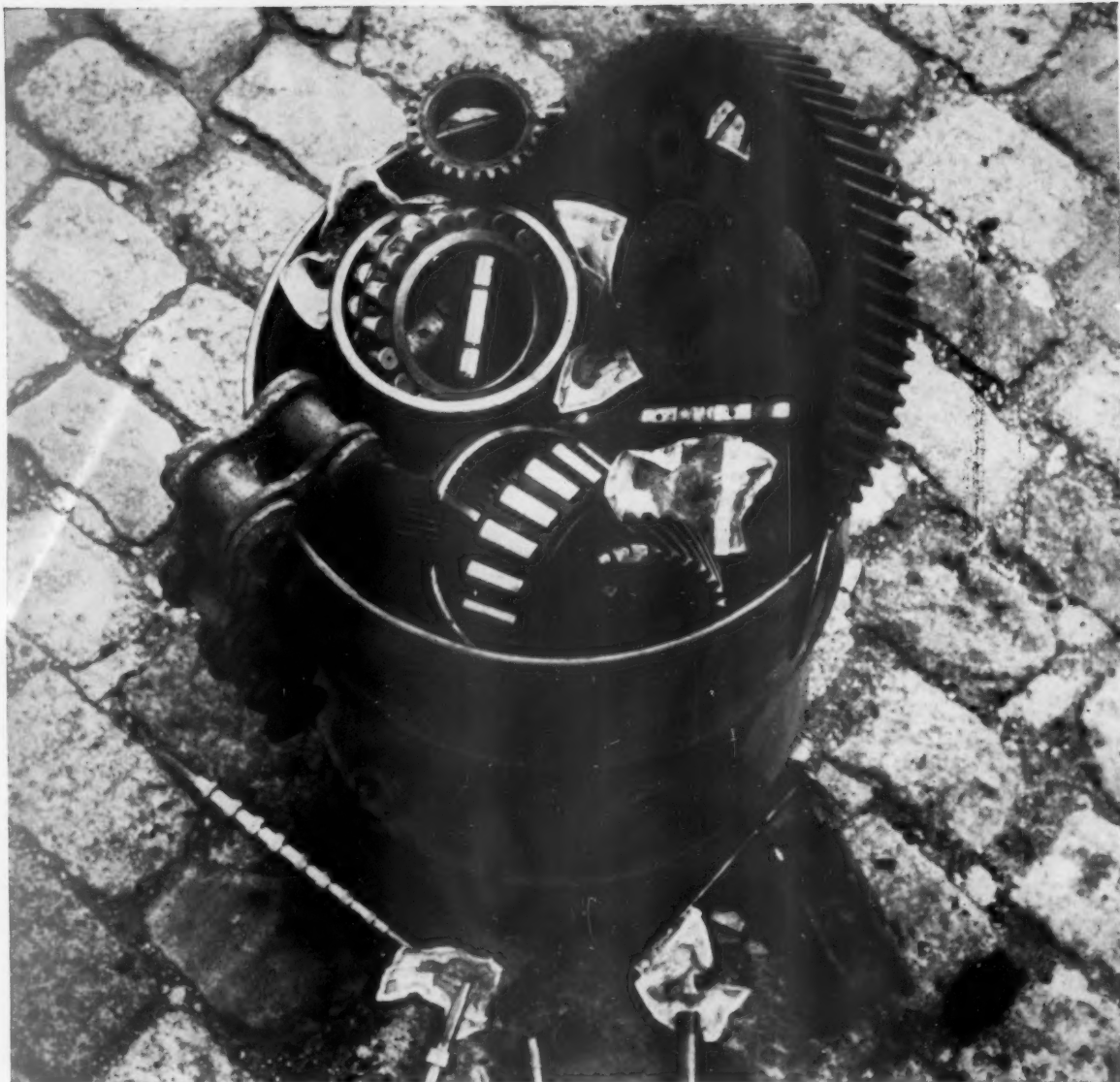


2. If you expect prices to rise, ?  
how large do you expect the  
increase to be?



3. During the next six months, ?  
what will your company's  
policy on prices be?





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## End replacement parts waste

Does it seem that you're buying replacement parts too frequently for one or more machines in your plant? One Northeastern manufacturer replaced parts in a major machine every two weeks, marking it off as normal maintenance expense. Actually, it was abnormal—the result of faulty lubrication practices. A Texaco Lubrication Analysis spotted the trouble, cured it.

Let Texaco help you reduce purchasing as well as maintenance costs. Check and see if your plant is operating under an

Organized Lubrication plan. If not, call in your local Texaco Lubrication Engineer. His advice can help you avoid waste in the buying and use of lubricants, and bring savings that can easily run up to thousands of dollars.

Send for Texaco's book "Management Practices that Control Costs via Organized Lubrication." It can mean the biggest return you ever got for a 4¢ investment!

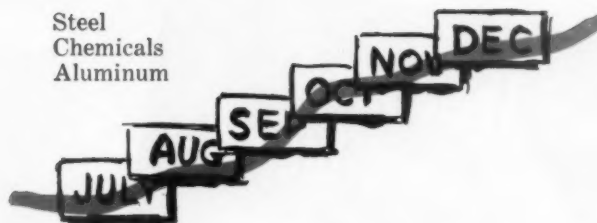
Texaco Inc., 135 East 42nd Street, New York 17, N. Y., Dept. P-110.



LUBRICATION IS A MAJOR FACTOR IN COST CONTROL

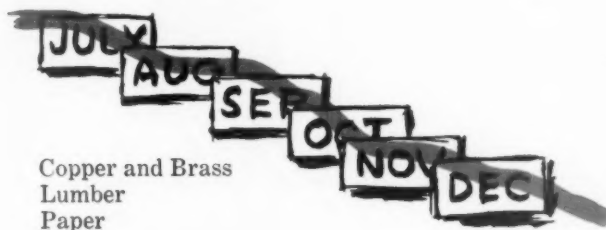
## Purchasing Opinion

4. Of the major commodities you buy, which ones do you expect to increase in price in the second half?

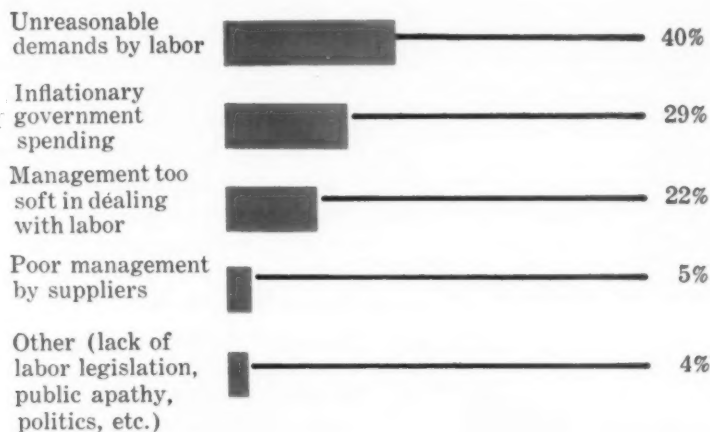


80% of the P.A.'s believe no price decreases in major commodities will be made. The remainder look for cuts in these materials:

5. What major commodities that you buy do you expect to decrease in price in the second half?



6. To what do you attribute the steadily advancing prices of recent years?



7. Are you in favor of any type of price control, if a similar type of wage control were adopted?



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Several Good Brands  
of Trichlorethylene**



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Combine PERM-A-CLOR with DETREX tailored-to-the-job equipment, and even greater efficiencies are realized. Operating costs are reduced, worker productivity is increased, more parts are cleaned per pound of solvent.

Now add the DETREX engineering organization — men most qualified to analyze and appraise the efficiency of metal cleaning operations — and you have another important reason why PERM-A-CLOR users get the most for their solvent dollar.

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Detroit 32, Michigan

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# PLASTICS

UNLIKE those of most commodities, plastics prices do not fluctuate very much with supply and demand. In the long run, prices are generally moving only one way—down. This situation is likely to remain constant until this growing industry approaches maturity, which is still some years away.

However, it does not follow that the best way to buy plastics is hand-to-mouth. That can be the worst way, severely penalizing the purchasing agent. For every plastics supplier puts a two or three cents per pound premium on material sold in less than carload lots. In addition, the "special deal" prevails in plastics purchasing; the amount you buy or are expected to buy often determines the price.

### Fast-Moving Developments

Why have plastics prices been dropping? Mainly because of the mushrooming development of new and better materials and more efficient ways of making them. Few industries spend as much as the plastics industry—two and a half cents of the sales dollar—for research and development. Most of the major developments come from the large chemical firms, like Union Carbide, DuPont, Monsanto, and Dow, the main plastics producers.

Though there are 14 different important plastics, most purchasing agents will be most concerned with three: *polyethylene*, *vinyl*, and *polystyrene*. These materials are all thermo-

plastics—which means they can always be melted by the application of heat.

Polyethylene—which is naturally flexible, slightly opaque, and has a waxy feel—is the largest volume plastic in the United States. Ten years ago, it was little more than a laboratory curiosity. It has developed faster than any other plastic, perhaps faster than most other industrial raw materials.

Largest use of the plastic is for film and sheeting, which accounted for 29% of 1958 production. Other large outlets were exports, 27%; molding, 14%; and wire and cable insulation, 10%.

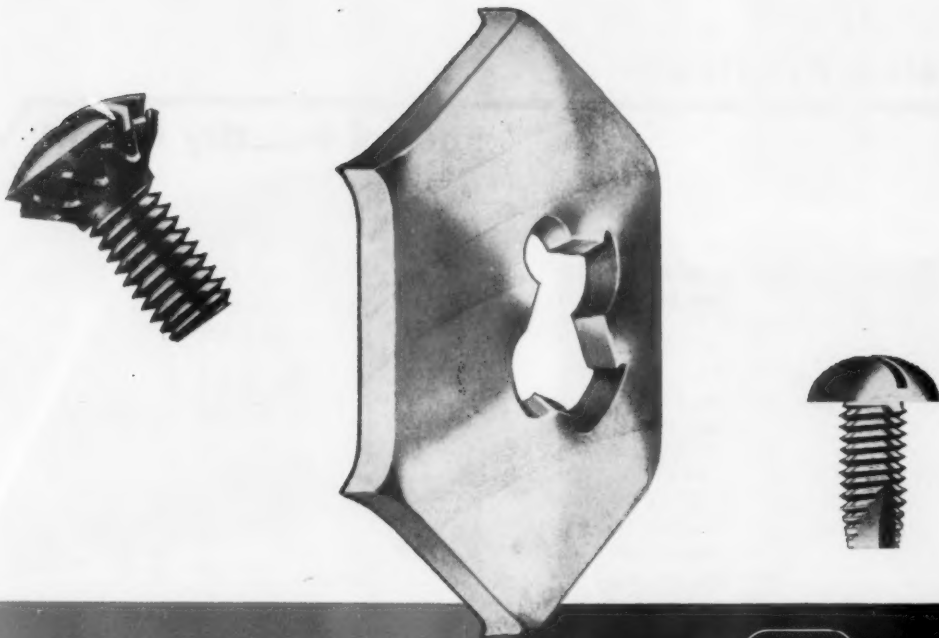
### High Density Polyethylene

Polyethylene's rate of growth shows no signs of slowing. Latest big development in this material is high density polyethylene, which is stiffer, stronger and more heat resistant. It can also withstand boiling water. Last year, high density polyethylene came into wide-scale commercial production; 35 to 40 million pounds of the material were sold.

Considering its rapid growth, the price of polyethylene has shown remarkable stability, with rising demand closely following production gains. The price of film grade, low-density resin is now 35¢ a pound, with molding material at 32¢.

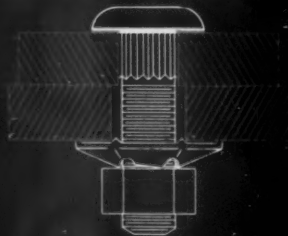
These prices have so far withstood reductions early in the year in the price of high density material. Phillips Chemical Co., the biggest produc-





## HOW TO SELECT COST-SAVING

# fasteners for heavy duty applications



### A TYPICAL EXAMPLE: How to Fasten Securely to Avoid Shifting

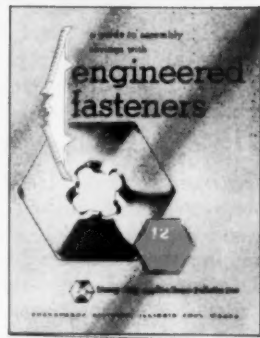
Where considerable tension in the fastening is needed to keep the parts from shifting, the Shakeproof®-developed Pyramidal Lock Washer\* should be used. This washer spans large clearance holes — provides tension needed to keep parts securely fastened and in alignment.

\*U.S. Pat. No. 2,794,476

For want of the right fastener, man-hours and money are often needlessly lost! It's vital to economical assembly line production to specify fasteners for each application that will do a fast and effective job *every* time. Fasteners engineered by Shakeproof assure maximum locking, reduce handling, and provide many additional functions that save assembly time, reduce production costs and improve your product's quality.

#### SEND FOR NEW SHAKEPROOF BULLETIN NO. 200

Shows typical examples of money-saving fasteners developed by Shakeproof engineers for heavy metal applications. Offers testing samples. Write for your free copy today!



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## Special Industry Report:

er, reduced the price from 43¢ per pound to 38¢. The move established a more realistic relationship between low and high density polyethylene. The improved properties of the latter material are worth the 3¢ differential, but perhaps not the larger one that had existed.

Last year three producers, notably Spencer Chemical Co. and U.S. Industrial Chemicals Co., added to their production facilities for low density polyethylene, bringing total capacity to over a billion pounds a year. However, sales last year in that area were only about 800 million pounds.

A reduction in the price of low density polyethylene is certainly coming in the future. The big question is when. Some experts see the price holding above 30¢ for the next three or four years.

### Markets For Vinyl

Polyvinyl chloride, or vinyl, is the plastic immediately identifiable in shower curtains, raincoats, and floor tile. It is a rigid plastic and must be compounded with a plasticizer to produce a flexible material. The major markets for vinyl last year were molding and extrusion, 31%; film and sheeting, 23%; flooring, 18%; and fabric treatment, 8%.

Vinyl sales suffered last year as a result of the hard goods recession. Since a large volume of vinyl goes into automobiles, reduced auto production hurt sales considerably.

Then too, another company entered the field, bringing the number of producers to 21. Small quantities of resin continued to come in at a low price from Italy and Japan. This all led to a general price reduction at the end of the year from 25¢ a pound to 23½¢.

The price of DOP plasticizer was also reduced by Monsanto Chemical Co. to 25¢ per pound from 28¢, and competitors followed. This was an important move, since most vinyl products use from 30% to 60% plasticizer.

Since vinyl capacity is well over a billion pounds a year and sales in 1959 of around 700 million pounds are expected, it may well be that the vinyl price is the softest in the industry.

### Styrene's Limitations

Polystyrene is the third important plastic. It is most familiar in the form of small shiny-surfaced toys. Styrene has high surface quality and is inexpensive to mold. Its limitations are breakability and low heat resistance, but these drawbacks can be overcome by the use of high impact and heat-resistant grades of material.

The big market for polystyrene is in products like radio cabinets, lighting fixtures, novelties,

premiums, pipe, and fittings. These miscellaneous items took 29% of styrene production last year. The refrigeration market absorbed 15%; packaging, 14%; toys, 10%; and wall tile and housewares 7%.

In February, important cuts were made in the price of styrene. However, these reductions had been expected for some time. Monsanto took the lead by reducing the price of general purpose natural color resin from 24½¢ per pound to 21½¢. Medium, high impact, and heat-resistant material were also reduced. Dow matched these reductions and went one better by offering colored styrene at a premium of only 2¢, under certain conditions. The premium for color has traditionally been 3¢ to 4¢.

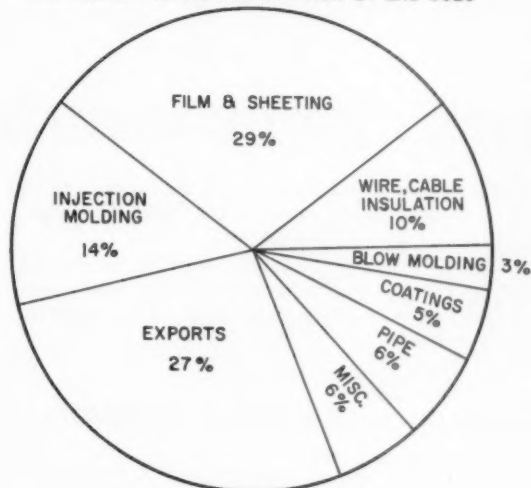
The price of styrene should be firm at the new lower level. At 21½¢, it has become the lowest priced plastic, with the single exception of phenolic—which is used for entirely different purposes.

### Other Types

Among the other plastics with which purchasing agents are familiar are the cellulose, acrylic, nylon, phenolic, and polyester. The important cellulose include acetate—used widely for blister packaging—and butyrate—which is tough and weather resistant.

Of these, nylon is the highest priced, now selling at \$1.18 per pound. Phenolic costs the least—about 19¢ a pound. And acrylic, polyester, and the cellulose are slightly more expensive than the three major plastics.

1958 POLYETHYLENE CONSUMPTION BY END USES



The largest single percentage of polyethylene production goes into film and sheeting. However, almost as much is exported.



## Here's what we mean by "off-the-shelf" delivery

These coils of stainless steel wire are waiting to be shipped out at a moment's notice from our stainless-specialty plant.

Wire precision-drawn from Inco alloys is our specialty. Getting it out to you on time is our pride. Coming back for more—and more—is a wonderful

habit of our customers.

If your design calls for wire in Monel\*, Inconel\*, or stainless alloys—try the products and service of our Alloy Works. For full information, write or call *Riverside-Alloy Metal Division, H. K. Porter Company, Inc., Riverside, N. J.*

\*Registered Trade Marks of the International Nickel Company, Inc.

**RIVERSIDE-ALLOY METAL DIVISION**

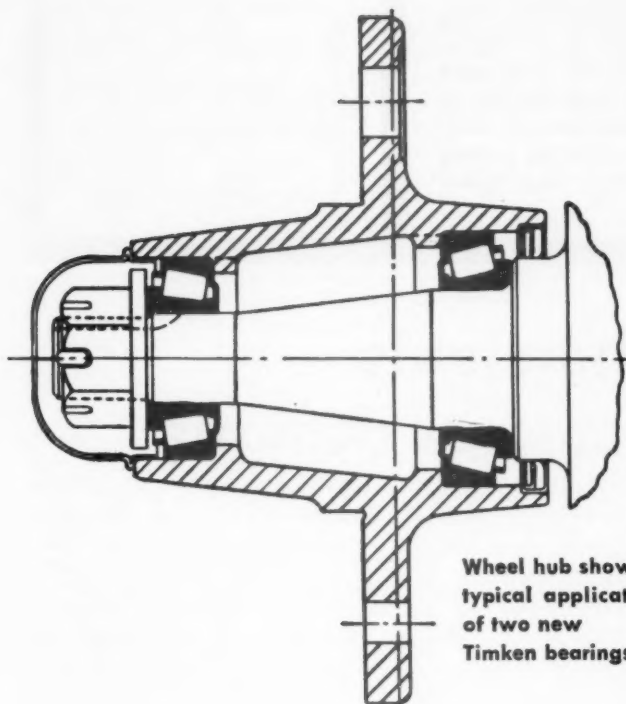
**PORTER**

**H. K. PORTER COMPANY, INC.**

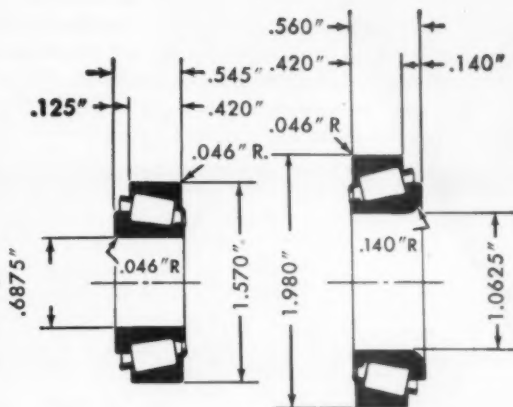
**PORTER SERVES INDUSTRY:** with Rubber and Friction Products—THERMOID DIVISION; Electrical Equipment—DELTA-STAR ELECTRIC DIVISION, NATIONAL ELECTRIC DIVISION; Copper and Alloys—RIVERSIDE-ALLOY METAL DIVISION; Refractories—REFRACTORIES DIVISION; Electric Furnace Steel—CONNORS STEEL DIVISION, VULCAN-KIDD STEEL DIVISION; Fabricated Products—DISSTON DIVISION, FORGE AND FITTINGS DIVISION, LESCHEN WIRE ROPE DIVISION, MOULDINGS DIVISION; H. K. PORTER COMPANY DE MEXICO, S.A.; and in Canada, Refractories, "Disston" Tools, "Federal" Wires and Cables, "Nepcoduct" Systems—H. K. PORTER COMPANY (CANADA) LTD.

For More Information Write No. 163 on Inquiry Card—Page 32

# Three new, low-cost TIMKEN® bearings open new design opportunities



Wheel hub showing  
typical application  
of two new  
Timken bearings.



LM 11749—LM 11710  
Wt. .181 lb.

L 44649—L 44610  
Wt. .256 lb.

ALSO L44643  
SAME AS ABOVE  
EXCEPT WITH 1" BORE  
Wt. .276 lb.

**W**ITH three new small size Timken® bearings, machine designers can now get the advantages of tapered roller bearings where they couldn't be used before. These new, smaller bearings pack high capacity in less space, and they're lower in cost. They permit more compact designs by keeping related parts smaller—provide additional savings in hub materials, seals, nuts and dust caps.

Diagram above at left shows two of them in a typical layout of a front wheel hub for the Automotive Industry's new compact cars. They're the most economical single-row

Timken bearings ever produced in bore sizes of  $\frac{1}{16}$ ", 1" and  $\frac{1}{4}$ ". Diagram above at right shows principal dimensions and weights.

Like all Timken bearings, these new Timken tapered roller bearings are geometrically designed and precision-made to roll true. Their taper lets them take *both* radial and thrust loads in any combination. And full-line contact between rollers and races provides extra load-carrying capacity.

Our Sales Engineers will gladly give you complete data, help you design the new bearings into your machines. Timken bearings make

any machine better, because Betterness rolls on Timken tapered roller bearings. The Timken Roller Bearing Company, Canton 6, Ohio. Canadian plant: St. Thomas, Ontario. Cable address: "TIMROSCO".



This symbol on a product means  
its bearings are the best.



# TIMKEN®

**TAPERED ROLLER BEARINGS ROLL THE LOAD**





## Industry's chemicals:

### WHAT'S MAKING NEWS?

If an annual report makes its readers expand with pride, it may be because sales have broken through to new highs. But just as often, it's because management has been able to push operating costs to new lows. This might be the result of a production short cut, an improved process, or a whole new plant. And sometimes, it's as simple as putting a new chemical in the right place at the right time. A few cases in point are reported below.

You may wish to check certain items in this advertisement and forward to those concerned in your company.

ROUTE TO:

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## New chemicals influence future car designs

Many of the designs planned for the automobiles of tomorrow call for specialized chemicals to make them tick. A peek at the work now in progress in Dow's Automotive Chemicals Development Laboratories shows what will be required of the antifreezes, lubricants and other automotive fluids of the near future.

Wondrous engineering advances await automobile owners of a few years from now. One may be a single unit that combines the present day functions of the transmission and rear axle. Another may cool the engine by boiling a liquid. No one can say for sure which of these and dozens of other innovations will be given the nod by automakers, but one thing is certain: Many new chemical fluids will be needed to make them feasible . . . chemical fluids far different than those used in cars today.

These new fluids are today being developed by creative chemistry, such as the experimental work being carried on in Dow's two new Automotive Chemicals Development Laboratories. Located in Midland, Michigan and Freeport, Texas, the two laboratories comprise extensive research facilities strictly devoted to automotive chemistry. Dow research chemists are currently concerned with many different projects involving the engine, cooling system, transmission, brake system and other important automotive areas.

One interesting area of study concerns viscosity index improvers for

lubricating oils. V.I. improvers help extend the range of temperature conditions under which lubricants can operate. For example, an engine oil standing idle at ten degrees below zero is apt to be pretty heavy and syrupy. But at normal engine operating tem-

peratures of 200 degrees and above, the same oil would "thin out" considerably. V.I. improvers give oil better consistency at both temperature extremes—and at all points in between.

Work on synthetic lubricants for transmissions is closely related. Heavier fluids are needed to carry the increased "loads" required of contemplated transmission designs. Fluids of higher density may permit smaller, more efficient transmissions.

Dow has long been active in the important area of antifreeze and cooling system research. This interest comes naturally, as Dow supplies several different formulations of ethylene glycol



Alleviation of rust and corrosion in the cooling system of today's automobile engine is the subject of continuing study in the Dow Automotive Chemicals Laboratories.



antifreeze to major oil companies and automotive manufacturers. Much of this work is concerned with improving the characteristics of today's all-winter antifreeze. Some, however, is on a strictly speculative basis—such as the engine that is cooled by boiling.

Other projects under way at Dow include the development of improved brake fluids, gasoline additives and several other specialized chemicals. Whatever direction automotive designs take in the next few years, Dow hopes to be ready with new chemical fluids that will meet their requirements.

#### DOW LOOKS TO FUTURE WITH NEW GLYCERINE PLANT

Glycerine, one of the chemists favorite workhorse chemicals, promises to grow in popularity in the years to come. The reason . . . stated simply, it is glycerine's versatility in so many industries.

Paper, dynamite, food, paint, tobacco, polyurethane, cosmetic and drug manufacturers have long admired glycerine—and not just for its sweet taste. For many years, it has saved many hundreds of thousands of chemicals processing dollars for tight-fisted management teams.

The future for glycerine users . . . very rosy, indeed. In fact, Dow proudly announces that a new improvement in manufacturing technique has led to an even finer quality in Dow's synthetic glycerine. Coupled with product improvement is a brand spanning new glycerine plant in Freeport, Texas.

What does this mean . . . Dow hints profit-minded production men are re-evaluating glycerine. They are using it to replace less versatile processing chemicals. Result . . . improved product and rising product profit curve.

#### DOW CHEMICALS BASIC TO INDUSTRY

Glycols, Glycol Ethers  
Amines and Alkylene Oxides  
Solvents • Benzene Derivatives  
Inorganic Chlorides • Germicides  
Alkalies and Halogens  
Fungicides • Herbicides • Fumigants  
Hundreds of other Chemicals  
Plastics • Magnesium

#### THE DOW CHEMICAL COMPANY

Midland, Michigan



#### HAIL THE LOW-PRESSURE COOKER!

In processing plants, getting the right amount of heat to the right place is frequently a serious problem. More and more, management men are turning to Dowtherm® A, a heat transfer medium with a number of definite advantages over both direct fire and steam. Dowtherm A has super-high heat stability in the 350°F to 750°F range, permitting pinpoint heat control. It transfers heat at high temperatures with much less pressure than steam. At 700°F, for example, steam exerts a pressure of 3,000 lbs. per square inch. At the same temperature, Dowtherm A pushes out with a pressure

of only 110 lbs. per square inch. Processors are invited to utilize Dow's years of heat transfer experience.



Pinpoint temperature control in 350°F-750°F range can accurately be achieved with Dowtherm.

**YOUR INQUIRY WELCOMED.** If you would like to know more about the Dow chemicals discussed in this advertisement, or others you may have heard about, write to us today. **THE DOW CHEMICAL COMPANY, Midland, Michigan, Chemicals Merchandising Department 607EE8-3**

## DOW CHEMICALS

*busy behind the industrial scene*



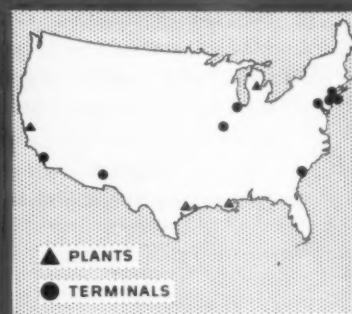
**SEPARAN®**—An old friend to the mining and pulp and paper industries, Separan flocculants settle solids in solution quickly and efficiently.



**BROMINE**—Dow continues as a major producer of bromine and brominated products whose uses range from fire retardants to pharmaceuticals.



**PHENOL**—As an adhesive component, phenol helps adhere plywood sections. Phenolic resins are used to make tough, heat resistant counter and table tops, durable varnish and lacquers.



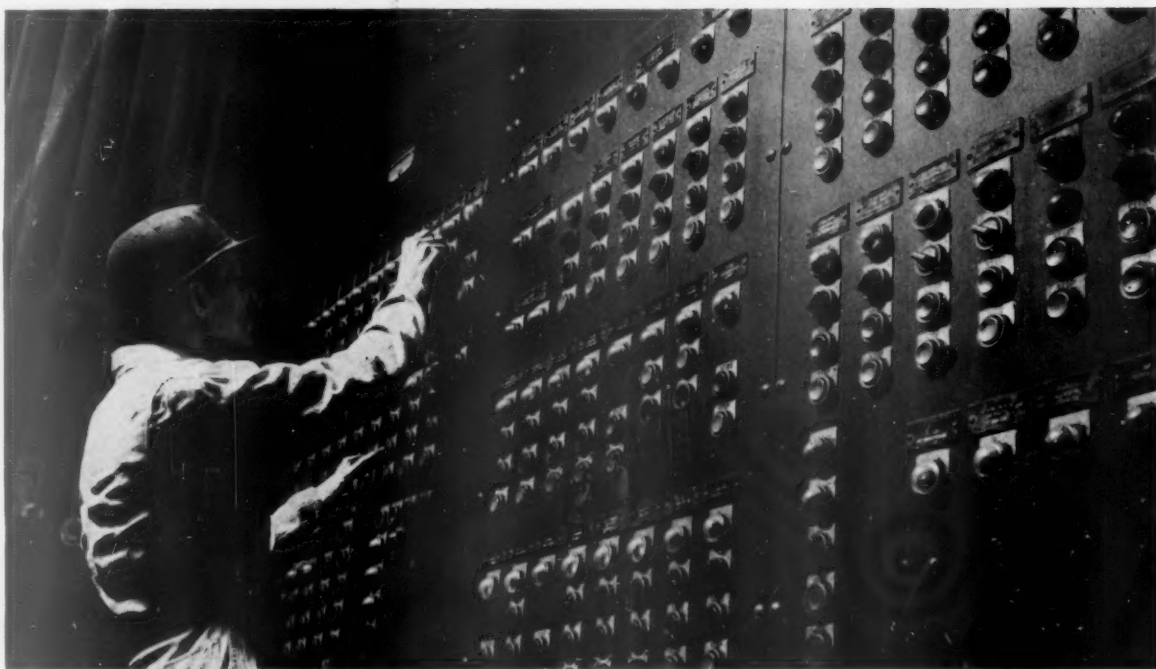
**CAUSTIC SODA**—Abundant supply of Dow Caustic guarantees quality product delivered when and where you need it. Four producing plants and nine terminals serve U.S. industry.

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More and more **coal** buyers are checking  
the net cost per **1000 pounds of steam**

---

**Result:** More and more specify Island Creek  
the coal that's **Precisioneered**\*



Nerve center of multi-million dollar Island Creek preparation plant where every complex operation is observed and controlled electrically.

\* **PRECISIONEERING** at Island Creek is many things. Essentially, it is starting with superior seams of eastern coal . . . and manufacturing it to the exact specifications *your* burning equipment requires to produce steam at the lowest net cost per 1000 lbs. This involves the use of precision engineering techniques in the most modern preparation plants. It involves strictest laboratory

controls. It involves far-reaching engineering service and evaluation studies. From start to finish it involves the *career company attitude* that has made Island Creek a leader to whom other leaders may look—with confidence. We'd welcome a chance to get down to *net* costs—with you and your plant people. Write. Or phone. No obligation, of course.

## **ISLAND CREEK** **Precisioneered Coal**

*You can depend on Island Creek . . . a career company dedicated to coal*

Island Creek Coal Sales Company, Chafin Building, Huntington 18, West Virginia • Chicago • Cincinnati • Cleveland • Detroit • Greensboro • New York • Pittsburgh

# Washington Report

## Fair Steel Strike Settlement Sought By Government Mediators

**T**HE government role in the steel strike has been to keep the bargaining going. Joseph F. Finnegan, director of the Federal Mediation and Conciliation Service, believes that if negotiations are continued, eventually both sides will get together to work out a fair and equitable settlement of the strike.

Once the workers "hit the bricks" in a strike, it takes a while for tempers to cool. Following this is another period for each side to properly assess its position. Then comes a period of attrition, when management begins to feel the economic pressures of a shutdown and the workers start to feel the loss of their paychecks.

There is little that the government can do to hasten the get-together process. Iron and steel have been a diminishing factor in the defense industries—so the strike could hardly be termed a national emergency for some weeks to come.

President Eisenhower made repeated efforts to bring about a settlement of the strike. Since it began, both the White House and Secretary of Labor Mitchell have kept on top of the dispute.

However, the steel industry has not been under the gun to settle. Purchasing agents and steel warehouses anticipated a shutdown quite a while ago. Steel buying built up to really big volumes during the second quarter.

As a result, the steel user pipelines, even after a couple of weeks of strike, are pretty well filled. In addition all production did not stop at the strike call. Steel industry spokesmen estimate that 15% of the industry continued to operate when the strike began.

This means that a small amount of new steel will continue to be



Federal mediator Joseph F. Finnegan (r.) wants to find the areas that Dave McDonald will negotiate. He's looking for the same from steel industry leaders too.

produced even though the bulk of the furnaces remain shut.

### Strike Data Lacking

Department of Labor officials don't have much information on the costs of a steel strike. And there is little economic data on the operation of the steel industry available in its files.

Conciliation efforts by Government officials—including direct efforts by the Federal Mediation and Conciliation Service and indirect efforts by the Secretary of Labor and by the White House—are carried out at the top levels. The economic staffs at the Department of Commerce and Department of Labor say that they have only second-hand information on the course of negotiations.

Industry sources estimate that \$50-60 million in wages is lost each week of the strike. The companies are faced with production losses of around \$43 million a day.

The steel industry will be faced with other costs too. Shutdown costs alone figure to be over \$20 million. The same amount will have to be spent when production starts again after the strike.

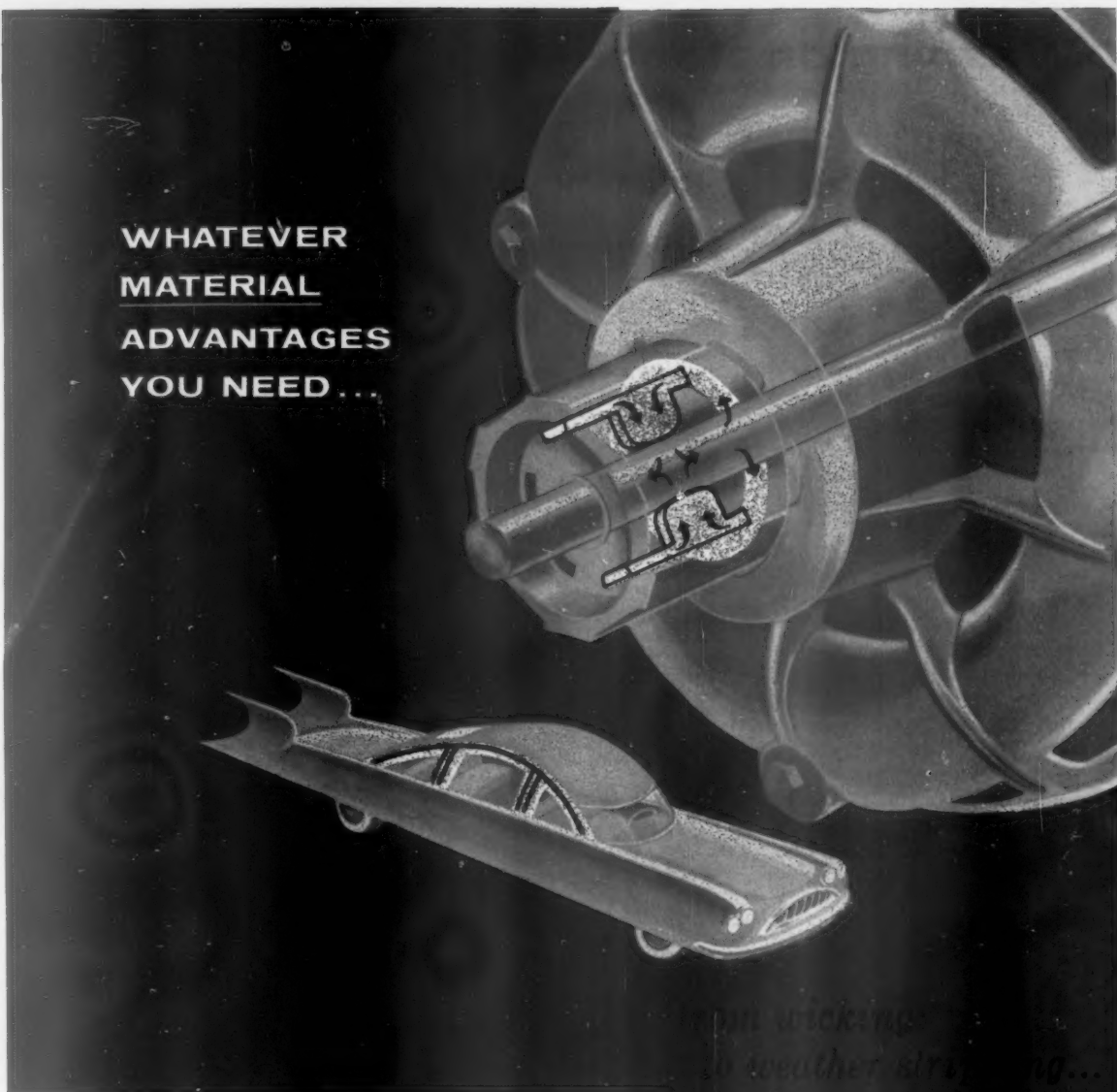
Strike problems are complicated by the technical aspects of the steel industry. During the abortive efforts of the White House to patch up the wage impasse before the strike actually began, the linings in two furnaces in the Cleveland area were burned out due to improper banking.

While the principal centers of steel production are Pittsburgh, Chicago-Gary, Cleveland-Youngstown, Detroit, Baltimore, Birmingham, Bethlehem, Trenton, and Los Angeles, steel ingots are actually produced in 28 states.

Largest markets for steel are (1) construction, (2) automobiles, and (3) highways.

Wage levels in the steel industry are among the highest in the

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YOU NEED...



**Versatile A+ FELTS** . . . manufactured to precise engineering standards . . . serve industry in a thousand tested ways. They form wicks to deliver oil to bearings and shafts, ounce by measured ounce. They provide comfort and quiet in modern cars, sealing out the weather, cushioning sound and vibration.

They are used in food packing plants, to filter syrups and concentrates. You'll find them in vibration mounts for heavy equipment . . . in decorative wall coverings . . . in optical polishing laps . . . and in postage meters.

These remarkable materials, bearing the A+ hallmark, are made only by American Felt Company. Their performance is mathematically predictable. Their characteristics are consistent. And because we have made the use of felt our special science, we can engineer solutions to complex problems. Send us *your* design problem; our engineers will follow through promptly. Write: Engineering Dept., American Felt Company, 808 Glenville Road, Glenville, Conn.

Among our famous trademarks: **VISTEX**—gaskets and seals; **AFCO**—cartridge filters; **"K" FELT**—sound absorbing and thermal insulation

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IN **A<sup>plus</sup>** FELTS!

American Felt  
Company





# Washington Report

nation. As of June 1959, the average hourly wage was \$3.10. At the first of the year, the average hourly earnings in steel were 84¢ higher than the average hourly pay for all manufacturing in the United States.

Last year the average annual payment per employee was \$5,846 plus \$610 in fringe benefits. There have been 11 increases in the basic wage rate in steel since World War II.

When a strike ends, it still takes time to get back into production.

First, the coke ovens have to be put back into operation. At the same time, the blast furnaces have to be "babied" into operation, one or two at a time.

Thus, it takes between ten days and two weeks to get the nation's steel complex back into full swing. It means that even after the strike is settled, there will be a period of time when no steel is produced.

## Compromise Foreseen

A compromise on wages and some union concessions on feather-bedding practices are looked for in the final settlement. The crux of the economic issues in the steel industry is whether the per ton cost of steel can be held down to a range that will not bring about an increase in price.

The general thinking here is that the per ton price can be held steady under two conditions: (1) if operations can be maintained at a high rate, and (2) if the steelworkers forgo "spread the work" practices and cooperate to boost productivity.

The Administration hopes that a settlement can be made without too much rancor between labor and management. If labor gets too much, a price rise in steel is inevitable. If management drives too hard a bargain, labor will go back on the job with little stomach to cooperate and boost productivity.

## ● 1959 Aluminum Outlook: 25% Better Than 1958

The Business and Defense Services Administration of the De-

partment of Commerce now says that its earlier forecast on demand for aluminum from P.A.'s was too modest.

The outlook this year for aluminum is now estimated at between 25% and 30% higher than in 1958. Shipments to consumers are likely to be between 10% and 12% higher than in the previous peak in 1956.

High levels of shipments during the first half of this year are partially explained by (1) increased inventory buying and (2) some forward buying to take advantage of the industry's guarantee of price protection for the first half. However, these are held to be only minor factors.

Real strength in the increased demand for aluminum, according to the government analysis, comes from the fact that with the exception of aviation, the major industries using the metal are running at a high rate.

Auto production is roughly a third higher than last year, and the 1959 cars use 10% more aluminum than last year's cars. The new "compact" cars will further increase the consumption of aluminum.

Building and construction this year has been running about 13% higher than last year, with private residential construction 29% higher. New homes are expected to use 50% more aluminum than was used in the new homes of 1958. In addition, the Commerce Department expects that 15,000 new homes will be built this year in which aluminum will be a major material.

Other factors building up demand for aluminum are the increased market for household appliances, the greater use of aluminum in containers and packaging, and increasing amounts being used in the steel industry for deoxidizing and alloying with other metals.

On the other hand, defense uses for aluminum are just about the same as last year. Between 9% and 10% of all aluminum shipments go to defense programs.

(turn page)

Advertisement  
● Bulletin No. 16

## Investment Casting News

Because of the wide variation in output, quality and reliability in today's big investment casting field, more and more purchasers are visiting their established . . . and potential . . . suppliers. Aside from inspection of manufacturing facilities, they are observing quality control methods, technical facilities, equipment, management attitudes . . . even housekeeping standards. Hitchiner welcomes these visits. We think this is one of the best ways a buyer can reliably evaluate the relative performance of a potential supplier. Everybody gains. The supplier gains a personal appreciation of the customer and his requirements; the customer gains a deeper appreciation of the producer's particular problems. This can lead to more efficient ordering and better service. Come visit Hitchiner.

• • •

Purchasers thinking about investment casting cost should rely on the manufacturer's cost-appraisal. Comparison with previously purchased investment-cast parts is of little aid in cost-appraising a new order. A different final cost may be expected for each variation in part shape, detail, dimension and alloy content. The only certain way to accurate cost-appraisal is to send prints to a supplier for quotation. Send your prints to Hitchiner, and we will "cost" the order by analyzing the step-by-step work needed to produce the part or parts involved.

• • •

The attitudes of purchasing agents in nine major industrial areas are reflected in the results of a survey conducted by a major trade publication. Hitchiner Manufacturing emerged as a top-ranked leader. The publication's questionnaire asked purchasing agents to name the manufacturer they would consider when recommending or buying various component parts, materials or services. No company names or brands were suggested by the publication and . . . Hitchiner drew an impressive preference of 11.0% in a field of over 106 investment casters.

• • •

The investment casting process offers three distinct advantages over other methods employed in the casting field, namely: ability to produce intricate shapes; ability to reproduce close detail and tolerances, and ability to cast in a wide alloy range. These advantages have made investment castings a "little giant" in a growing field.

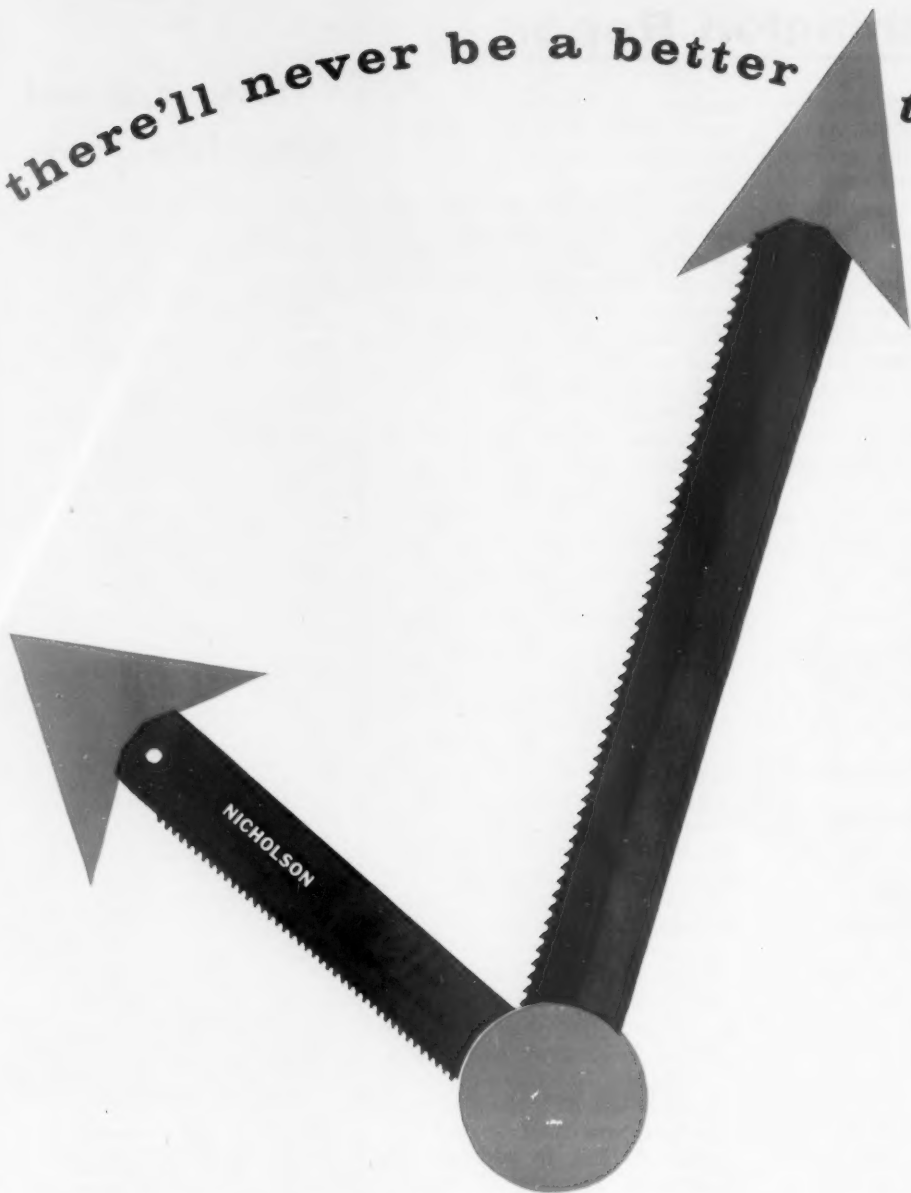
## HITCHINER

MANUFACTURING COMPANY, INC.

MILFORD 54, NEW HAMPSHIRE

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there'll never be a better  
time...



for you to call your distributor of Nicholson or Black Diamond blades. Ask him for a first order of the blades you regularly use.

You'll like them. Not that we promise miracles. We don't. But we do promise that you'll get as fine a blade as money can buy. And not much money at that, considering the way we make them. The Nicholson or Black Diamond trademark never goes on our blades until our inspectors are positive they deserve it. And they're hard to please.

A good many industrial blade buyers and users have been using our blades for nearly a year now. Best gauge of the way they like them is the way

they keep reordering them. Isn't it time for you to call your Nicholson or Black Diamond blade distributor? Never be a better time.

*If you use Ground Flat Stock—or could—your Nicholson or Black Diamond blade distributor can save you \$ in this department, too. Ask him for details.*

\* Industrial Distributors provide the finest goods and services in the least possible time. Our products are sold exclusively through them.



**NICHOLSON**



Nicholson File Company, Providence 1, Rhode Island

FILES • ROTARY BURS • HACKSAW AND BAND SAW BLADES  
GROUND FLAT STOCK • INDUSTRIAL HAMMERS

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## Washington Report

### ● Capital Spending Rise Predicted for 4th Q

Plant and equipment spending is beginning to show real gains.

Government economists have been expecting industry to step up its plant and equipment buying, since the recovery began a year and a half ago.

The rate of spending for plant and equipment during the first quarter of this year was \$30.5 billion. The forecast for third quarter is \$33.4 billion. For the final quarter, spending is likely to reach between \$34 billion and \$35 billion.

Last year when unemployment was a major problem, over 60 bills were introduced in Congress to aid "depressed areas." In general, the proposed legislation provided for Federal aid in the form of loans for plant construction, technical assistance, and vocational training.

One of these bills passed the Senate in early Spring. Now, with recovery underway, the depressed area legislation is in committee in the House of Representatives, with little sentiment for its present passage.

### ● Hydro Power to Back Up Atomic Energy

The Federal Power Commission estimates that only 24% of the total hydroelectric power resources has been developed in this country. But it believes that present construction and future planned expansion will increase this to close to half of its potential.

As nuclear power plants become economical, the Power Commission suggests that hydro projects will be useful to back up power produced by atomic plants. For the nuclear plants will be designed for operation at high capacity factors. Atomic power is most economical when the power unit is operating at capacity.

Hydro plants are relatively simple and of rugged construction. They operate at low speeds and temperatures. For these reasons they are complementary in operation to nuclear power plants.

—by A. N. Weckslar

AUGUST 3, 1959

*something*  
**extra...**



*that's what you want in a fuel...*

*what you get in B&O Bituminous!*

Sure, bituminous coal is power-packed—it's prepared to suit any industrial utilization—its source is most convenient to industry. But, bituminous gives you the *extra* that no other fuel can—*nearly inexhaustible reserves, always available!*



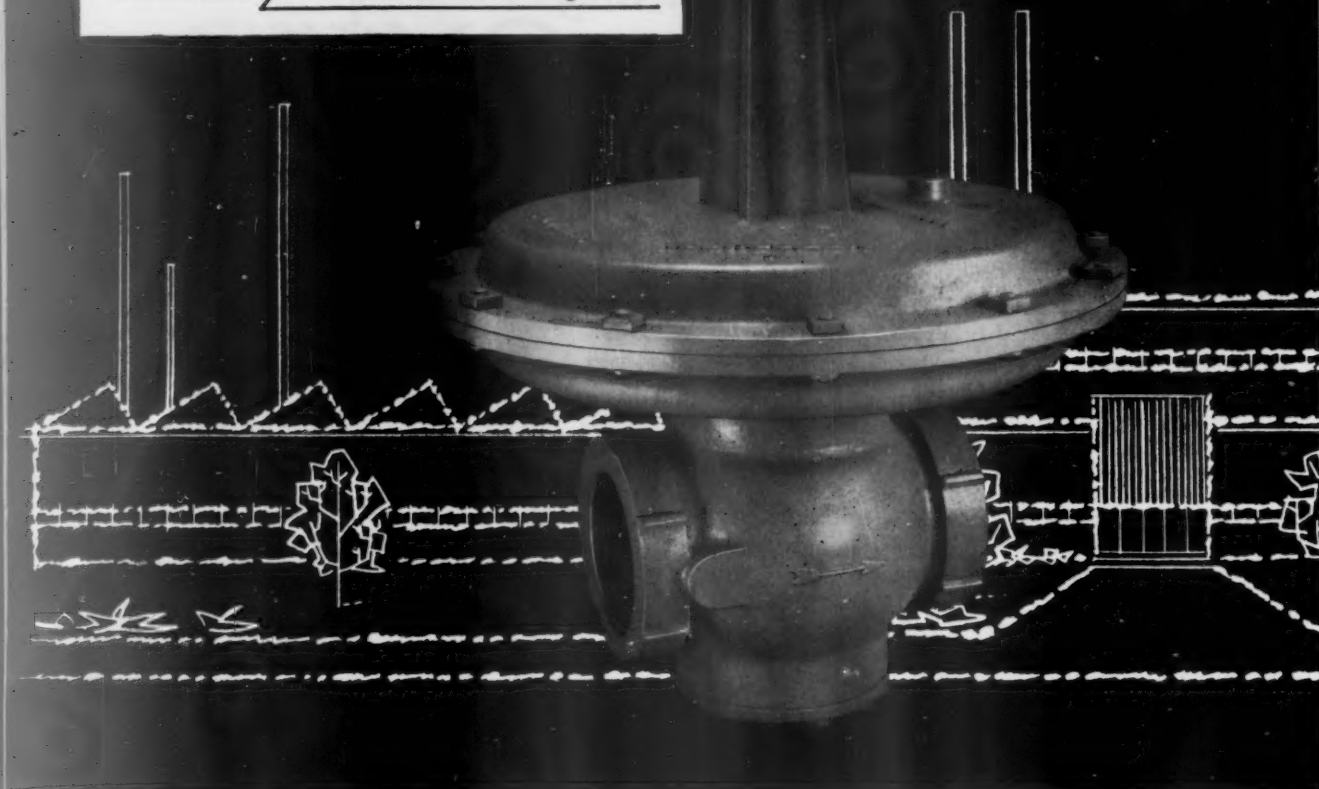
**B&O**

**BITUMINOUS COALS FOR EVERY PURPOSE**

Ask our man! BALTIMORE & OHIO RAILROAD  
BALTIMORE 1, MD., Phone: LEXington 9-0400

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For More Information Write No. 171 on Inquiry Card—Page 32→

Measurement / Control ideas for cutting costs:



## The \$40.00 regulator that could have saved \$30,000.00

A gas pressure regulator like the one shown above was doing a precise job of regulating fuel gas in a glass plant—until a scaffold fell on it. Without the regulator, the entire plant was out of business. Down-time cost was about \$30,000.00.

The Rockwell Field Engineer who personally rushed another regulator to this customer pointed out that an extra stand-by regulator would cost only \$40.00—low-cost insurance against a possible \$30,000.00 loss. The customer followed this recommendation, as well as others which the Field Engineer made in the interest of more efficient handling of measurement and control functions in this plant.

There are many ways a Rockwell Field Engineer can help *you* save time, money, and material wherever gases or liquids flow through pipe in your plant. He represents the largest and most experienced manufacturer of measurement and control products—and this experience can pay off for you. New or different uses of valves or regulators can prevent waste and inefficiency. Rockwell gas and liquid meters can measure almost anything that flows through a pipe, and can often assure big savings in time and labor, while improving quality.

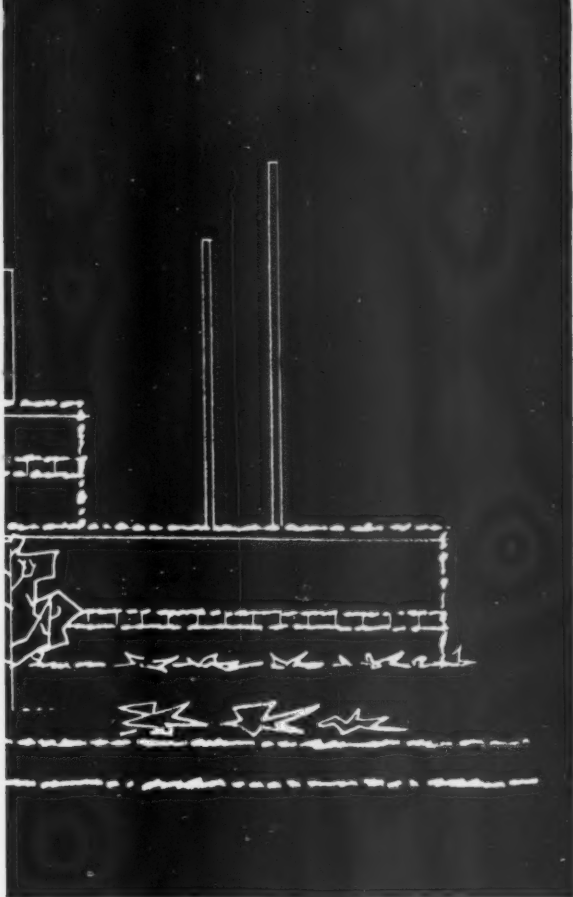
It costs nothing to talk to a Rockwell Field Engineer—simply send the coupon.

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# ROCKWELL

The leading single source for Measurement / Control products and ideas





## HOW MUCH COULD YOU SAVE?

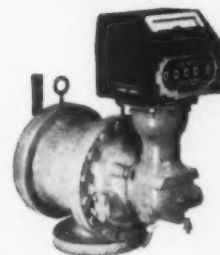
There is hardly a plant of any kind—including yours—where the right application of the right measurement and control methods and equipment won't produce savings many times the modest cost involved. It will cost you nothing to have a Rockwell Field Engineer *show* you. Simply send the coupon below, now.

**SEND COUPON NOW!**

## "IN-PLANT" METERING:

### LIQUIDS AND GASES

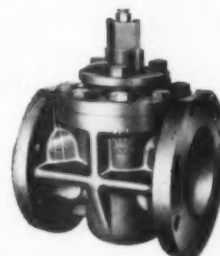
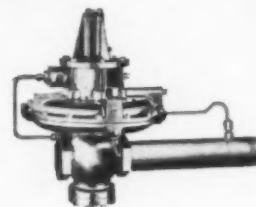
"IN-PLANT" METERING can mean new cost cutting opportunities. Accurate liquid and gas meters are a positive way of improving cost control, insuring better use of materials, sharpening inventory control, and preventing waste. Whatever the need, Rockwell has the right liquid or gas meter to do the job better and at lower cost.



## CONTROLLING PIPED MATERIAL:

### LIQUIDS AND GASES

CONTROLLING PIPED MATERIAL more efficiently is a positive step towards cost cutting. Better valves can save wasted products and materials and often increase plant safety. Gas pressure regulators can cut costs by assuring safe, economical use of any gas used in the plant. Rockwell has the world's most complete line of flow control devices.



MEASUREMENT & CONTROL DEVICES

another fine product by

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Rockwell Manufacturing Company, Pittsburgh 8, Pa. Dept. MC 3H

☐ Please have a Rockwell Field Engineer call me for an appointment.

Please send literature on ☐ Controlling gas pressures; ☐ Valving gases, liquids and slurries; ☐ Measuring liquids; ☐ Measuring gases.

I am concerned primarily with ☐ Light & Heavy Metal Fabricating ☐ Basic Chemical Production ☐ Chemical Processing ☐ Food, Drugs & Tobacco ☐ General Manufacturing Operations ☐ Petroleum Processing

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Name: \_\_\_\_\_ Title: \_\_\_\_\_

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**YOU CAN'T  
BARGAIN  
WITH SAFETY**



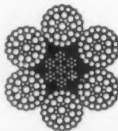
**WICKWIRE ROPES  
FOR  
INDUSTRIAL USE**



6 x 25 Filler Wire, FC



6 x 41 Filler Wire, FC



6 x 46 Filler Wire, IWRC

*For detailed recommendations,  
write the nearest CF&I sales  
office and ask for WR 722.*

*For safety and performance*

*... order **CF&I-WICKWIRE***

*"job-designed" wire ropes*

The Image of CF&I—a giant steelman—stands for the rigid quality-controls and testing procedures that are carried out in the production of Wickwire Rope. This Image also reflects CF&I's ability to design a specific product to meet a particular need.

These are the very reasons why CF&I-Wickwire Ropes are both *safe*—as only a *quality* wire rope can be—and *suitable*—because they are available in a *complete range* of wire grades, types, sizes and constructions, designed to meet each industry's requirements.

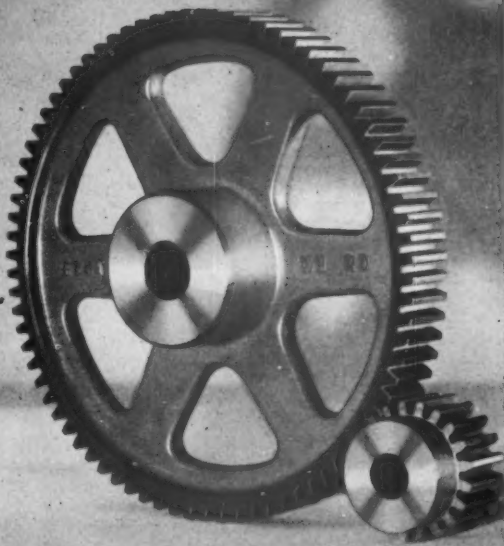
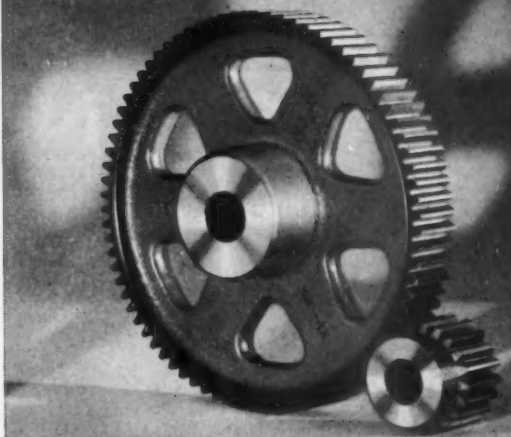
Avoid the losses—due to injuries and wrecked equipment—that can occur when a "bargain" rope fails. Buy a quality wire rope that's designed for the job it must do—a CF&I-Wickwire Rope.

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THE COLORADO FUEL AND IRON CORPORATION



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El Paso • Farmington (N. M.) • Ft. Worth • Houston • Kansas City • Lincoln • Los Angeles • Oakland • Odessa (Tex.)  
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6794-G

<b>14½° P.A.</b> pinion 2.5" P.D. gear 10"	<b>SAME RATIO</b>	<b>20° P.A.</b> pinion 2" P.D. gear 8"
WEIGHT 14 lbs. 15 oz.  CENTER DISTANCE 6.25"	<b>SAVES 31% IN WEIGHT</b>	WEIGHT 10 lbs. 2 oz.  CENTER DISTANCE 5"
<b>SAVES 20% IN SPACE</b>		
		
PRICE <b>\$28.95</b>	<b>SAVES 23.7% IN COST</b>	PRICE <b>\$22.09</b>

Both meet the job specifications — but  
**one of these gear sets costs you 23% less**

**NOW...567** STANDARD SIZES OF  
**BOSTON 20° P.A. GEARS**  
*FROM STOCK*

**SPUR** Steel and Iron 20 to 4 P.  
 Fine Pitch Brass 64, 48, 32, and 24 P.  
**MITER** Cast Iron 8 to 2½ P. Steel 48 to 4 P.  
 Fine Pitch Brass 48, 32, and 24 P.  
**BEVEL** Steel and Iron 20 to 3 P.  
 Fine Pitch Brass 48, 32, and 24 P.

For complete listings  
 see the BOSTON GEAR  
 CATALOG No. 57



Every engineer knows the quiet-running efficiency and high strength of the 20° Pressure Angle tooth form. For most installations, the 20° P. A. Gear that meets specifications saves an average of 20% in space, weight, and cost over the comparable 14½° P. A. Gear required.

Now, the types and sizes of 20° P. A. Gears you need to make these big savings in your assemblies are available, anywhere in industrial U.S.A. and Canada, **FROM STOCK** at over 100 conveniently located **BOSTON GEAR Distributors**.

Your local Distributor's factory-trained gear specialist is at your service. Get details. Start *making* the savings you've been missing. Boston Gear Works, 74 Hayward St., Quincy, Mass.

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*Gear*  
**DISTRIBUTOR**



— STANDARDIZATION PAYS —

# STANSCREW

## Symbol of a new concept

### in fastener service

American industry is learning Stanscrew means extra values.

This symbol personifies a trained staff of fastener specialists. Their technical assistance can often help you reduce fastener and assembly costs.

It means extra quick deliveries from complete inventories maintained at three conveniently located plants . . . over 5,000 different types and sizes to assure a broad selection for the great majority of your requirements . . . and, above all else, fasteners of consistently high quality.

Although it first appeared in 1958, the Stanscrew trademark represents a wealth of fastener experience. For it combines the technical skills and specialized facilities of three major manufacturing divisions of Standard Screw Company, each an honored name for more than 80 years. They are:

THE CHICAGO SCREW COMPANY, BELLWOOD, ILLINOIS

HARTFORD MACHINE SCREW COMPANY, HARTFORD, CONNECTICUT

THE WESTERN AUTOMATIC MACHINE SCREW COMPANY, ELYRIA, OHIO

For fasteners, specify Stanscrew. For other needs of home and industry, Standard Screw divisions also produce:

*Moen single-handle faucets • Hartford textile spindles*

*Roosa Master fuel injection pumps • Chicago tappets*

Each division also provides a complete design and manufacturing service for cold headed and screw machine products.

#### STANDARD SCREW COMPANY

2701 Washington Boulevard • Bellwood, Illinois





# The Unique Deionizing and Non-Arc Tracking Properties of Vulcanized Fibre and Their Applications

by Earl A. Russell, Chief Engineer, Spaulding Fibre Company, Inc.

• When subjected to high temperatures such as those created by an electric arc, Spaulding Vulcanized Fibre produces an arc-quenching gas. Two important effects are noted:

1. The Fibre neutralizes the charges present in the air that has been ionized by the arc, permitting instant reassociation or deionizing. Ionized air conducts electricity. Deionizing it re-establishes air's normal insulating characteristics, thus extinguishing the arc and preventing the line current from flowing through to ground.

2. The Fibre covers itself with a gaseous, non-flammable layer that suppresses combustion of the fibre. This effect resists the formation of a carbon track between electrodes when an electric arc passes over the surface.

All grades of Spaulding Vulcanized Fibre have these properties. However, the greater density of Spaulding Supergrey (Bone Grade) provides them to a superior degree.

## Applications

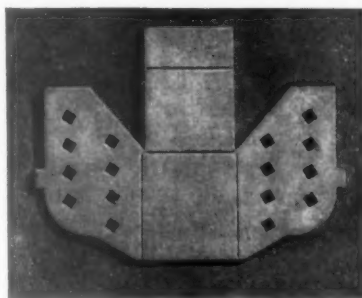
In addition to the applications noted in Figures 1 and 2, Spaulding Vulcanized Fibre is especially suited for these uses:

• Fibre properties which cause it to be non-arc-tracking and arc extinguishing, lead it also to resist igniting under short term, high temperature arcs such as might be encountered in the burning of a fuse link or when used as an arc shield.

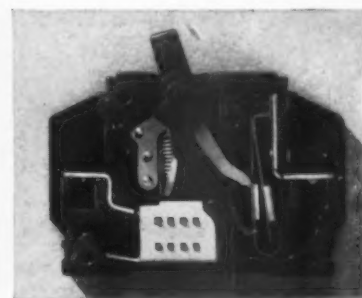
• Fuse cases of solid wall fibre tubing for inside fuses and as an inner liner in Spauldite tube cases for pole line outdoor fuses exposed to weather. This takes advantage of the structural strength of Vulcanized Fibre tube in addition to the resistance to igniting characteristics.

• Both oil switches and oil circuit breakers designed to interrupt high power currents take advantage of the arc extinguishing properties of Vulcanized Fibre by drawing the arc through narrow and circuitous channels in the fibre ~~bundle~~ stacks.

• Perhaps the most spectacular use made of the deionizing properties of Vulcanized Fibre is in the lightning surge arrester units of the expulsion type. These are now available in many types, all based upon the principle of conducting the lightning discharge to ground through an external and internal gap. In the latter, the arc chamber provides small passageways in the Vulcanized Fibre designed to extinguish the arc in micro-seconds to prevent power current from following through to ground.



**FIGURE 1.** The arc extinguishing properties of Spaulding Vulcanized Fibre are used in distribution switches and small circuit breakers where opened contacts draw the arc close to the fibre surface where it is extinguished.



**FIGURE 2.** In the widely used circuit breaker, a combination of metal grids held within a framework of Spaulding Supergrey Fibre is economical and effective in snuffing the arc. Serving the same purpose as a fuse it has the advantage of quick re-use after cutting the circuit.

## SPAULDING VULCANIZED FIBRE SHEETS PHYSICAL PROPERTIES

PROPERTY	THICKNESS INCHES	COMMERCIAL GRADE For Mechanical and Electrical Use		BONE GRADE SPAULDING SUPER GREY Highest Density Maximum Hardness	
		Crosswise	Lengthwise	Crosswise	Lengthwise
Tensile Strength P.S.I. Typical	1/8 to 1/2 incl.	7,500	12,000	7,500	12,500
Flexural Strength P.S.I. Min.	1/8 to 1/2 incl.	Crosswise 12,000	Lengthwise 14,000	Crosswise 13,000	Lengthwise 15,000
Izod Impact — Ft/lbs per in. of Notch, Min.		1.2	1.6	1.0	1.4
Density — G. per Cu. Cm. Min.	Over 3/32 to 3/8 incl.	1.20		1.30	
Water Absorption Change in Wt. % Max.	1/8	2 Hr. 35	24 Hr. 61	2 Hr. 20	24 Hr. 48
Dielectric Strength Volts per Mil. Min.	Over 1/8 to 3/8 incl.	100		100	

Low heat conductivity oil, grease and solvent resistant, light weight, tough, resilient, high mechanical and electrical properties, easily machined and formed, wear resistant, economical.

Write for a free copy of Spaulding's new booklet, "Vulcanized Fibre Engineering Data"

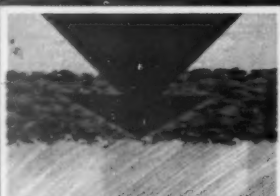
**SPAULDING FIBRE COMPANY, INC.**

323 Wheeler Street

Tonawanda, New York

For More Information Write No. 175 on Inquiry Card—Page 32  
AUGUST 3, 1959

For More Information Write No. 176 on Inquiry Card—Page 32→  
33



### PENETRATES RUST TO BARE METAL

The specially-processed fish oil vehicle in the Rust-Oleum 769 Damp-Proof Red Primer penetrates rust to bare metal—as proved in radioactive tracing studies.

ON RUSTED SURFACES simply apply Rust-Oleum 769 Damp-Proof Red Primer directly over the sound rusted surface after scraping and wirebrushing to remove rust scale and loose rust. You stop present rust, because the *specially-processed* fish oil vehicle in the primer penetrates through the rust to bare metal—driving out air and moisture that cause rust. You save time and

money—as costly surface preparations are usually eliminated. It's easier to use, too... because the "grease-like" nature of the fish oil vehicle in the primer enables it to slide over the surface and work its way through the rust formations—yet, it dries to a firm, protective, decorative coating that provides a tough, durable base for Rust-Oleum finish colors.

# RUST-OLEUM<sup>®</sup>

## STOPS RUST!<sup>®</sup>



What the  
Rust-Oleum  
**SYSTEM**  
.....  
of lasting  
beauty  
does  
for you!



A matter of excellence.  
Distinctive as your own fingerprint.



BRUSH OR SPRAY the Rust-Oleum finish color of your choice over 769 Damp-Proof Red Primer—that's the Rust-Oleum system of colorful, lasting beauty for rusted metal. Previously painted surfaces in good condition normally require only one Rust-Oleum coat. Rust-Oleum top coatings are available in practically ALL COLORS. Many of them are specially formulated to

resist heat, chemicals, and other corrosion-producing conditions, while others are formulated to match the original colors on construction, farm, and oil field machinery and equipment. Try Rust-Oleum soon. Prompt delivery, efficient service, and a wealth of rust-stopping experience are yours through your nearby Rust-Oleum Industrial Distributor.

Available in all colors!



— SEND FOR FREE TEST SAMPLE! ATTACH TO YOUR LETTERHEAD! —

Rust-Oleum Corporation  
2983 Oakton Street, Evanston, Illinois

Please send me the following at no cost or obligation:

- ☐ Free test sample of Rust-Oleum 769 Damp-Proof Red Primer for rusted metal surfaces.
- ☐ Complete literature with applications and color charts.
- ☐ Information on matching special colors.
- ☐ Thirty-page report on Rust-Oleum fish oil penetration.

**THOMSON TAKES EXTRA  
PAINS TO PREVENT  
FASTENING HEADACHES!**  
Statistical quality control  
procedures plus 100%  
inspection give double  
assurance of close adherence  
to specified rivet dimensions  
and positive protection  
against interrupted production.




## **YOU GET PRECISION FASTENING AT MASS PRODUCTION COSTS...**

**... when Thomson becomes your fastening partner.**

In the Thomson line of more than 8,000 rivet designs, you'll find the semi-tubular, deep-drilled, bifurcated (split), shouldered or compression rivet that will give you the best strength-cost ratio in the fastening field. Produced to the industry's highest quality standards at production rates exceeding 20,000,000 rivets a day, these low-cost fasteners merit serious consideration in your product-improvement and cost-reduction programs.

*Our leadership in solving fastening problems with quality rivets and precision rivet-setting machines since 1885 is at your service. What is your problem?*



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*D.C. All the way!*

*Johnson*  
PURCHASING AGENT

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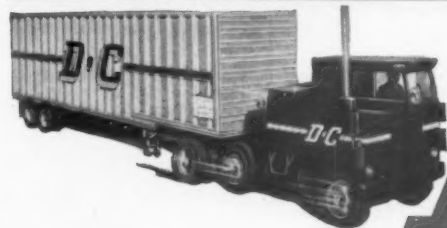
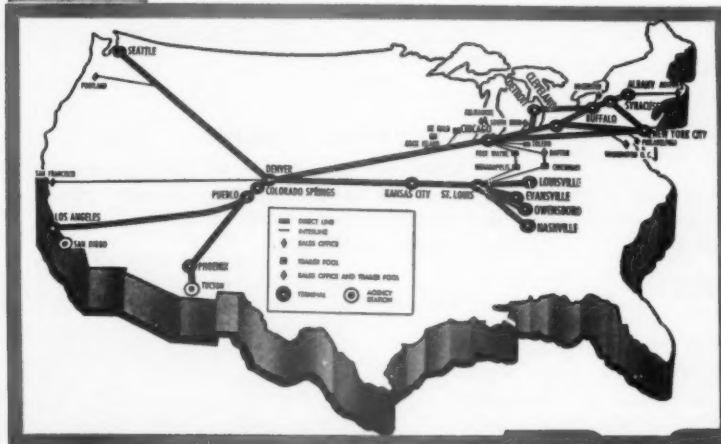
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with **NON-STOP, 2-MAN SLEEPER CABS***

*coast-to-coast!*



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Denver, Colorado	Phoenix, Arizona
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Evansville, Indiana	St. Louis, Missouri
Kansas City, Mo.	Seattle, Washington
Los Angeles, Cal.	Syracuse, New York

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*Cincinnati	Rochester, N.Y.
*Dayton	**Rock Island, Ill.
*DeKalb, Ill.	San Francisco
*Ft. Wayne	South Bend, Ind.
*Indianapolis	**Toledo
*Milwaukee	Washington, D.C.
New York City	*With Trailer Pool
Philadelphia	**Trailer Pool Only

**DENVER CHICAGO TRUCKING CO., INC.**

AUGUST 3, 1959

For More Information Write No. 177 on Inquiry Card—Page 32

# Information For Your Catalog Files

## BALL BEARINGS

Bulletin 110 provides information on deep-groove ball bearings. The 12-page catalog lists dimensions, loads, and other application data for deep-groove bearings.

**Hoover Ball and Bearing Company**

Write No. 1 on Inquiry Card—Page 32

## DUCT FANS

Bulletin A-116 describes a new line of fiberglass-belt-drive duct fans. Includes information about fans in 20", 24", and 28" diameters.

**Hartzell Propeller Fan Company**

Write No. 2 on Inquiry Card—Page 32

## EYELETS

A 48-page three-color catalog on industrial eyelets and eyeletting machines. Includes information on the several classifications of eyelets. Also has photographs, line drawings, dimensions, and specifications of each machine model.

**United Shoe Machinery Corporation**

Write No. 3 on Inquiry Card—Page 32

## FAN MOTORS

A four-page catalog on fan motors in ratings of 1 to 125 horsepower. Bulletin 2950 gives application data for determining motor horsepower ratings in an installation for various air velocities.

**Louis Allis Co.**

Write No. 4 on Inquiry Card—Page 32

## FIRE ALARM SYSTEMS

Catalog F249 describes manual and automatic fire alarm systems. Has illustrations, descriptions, and circuits of various systems.

**The Gamewell Company**

Write No. 5 on Inquiry Card—Page 32

## FLAT SPRING STEEL

A 28-page three-color bulletin containing physical data on cold-rolled high-carbon flat spring steel. Catalog 579 includes comparison tables, edge specifications, and basic hardness definitions.

**National-Standard Company**

Write No. 6 on Inquiry Card—Page 32

## FORK TRUCKS

A four-page bulletin describing 2000-lb. capacity electric-powered fork trucks. Has photographs, pictures of major components, and detailed engineering drawings. Operating information and design specifications are included.

**Elwell-Parker Electric Company**

Write No. 7 on Inquiry Card—Page 32

## FRACTIONAL HORSEPOWER MOTORS

An eight-page capsule catalog of fractional horsepower motors. Motor parts sets, blowers, and gear reduction units are also listed. Specifications are given for all motors shown.

**Howard Industries, Inc.**

Write No. 8 on Inquiry Card—Page 32

## HYDRAULIC SYSTEMS

Bulletin B-4 is a 44-page treatise on hydraulic fundamentals and hydraulic oils. The most important types of valves, pumps, motors, torque converters and accessories are illustrated.

**Sun Oil Co.**

Write No. 9 on Inquiry Card—Page 32

## MACHINE CUTTING TORCHES

Form ADC 880 lists a line of machine cutting torches, tips, and accessories. The 12-page catalog describes and illustrates torches for use with oxygen, acetylene, propane, and gas.

**Air Reduction Sales Company**

Write No. 10 on Inquiry Card—Page 32

## O-RINGS

A booklet outlining the physical and mechanical considerations of O-Ring selection. Contains reference tables plus information on maintenance of O-Ring seals.

**Auburn Manufacturing Company**

Write No. 11 on Inquiry Card—Page 32

## PHOTOELECTRIC CONTROLS

Bulletin GEA-6822 describes photoelectric controls for counting, sorting, signaling, protecting, diverting, detecting, and limiting. The 16-page catalog includes descriptions, specifications, and pricing data on many types. Includes illustrations.

**General Electric Company**

Write No. 12 on Inquiry Card—Page 32

For More Information Write No. 178 on Inquiry Card—Page 32→

**PURCHASING**



Robertson



## Accent on Excellence

### Youngstown cold-rolled steel sheets

*One of a battery of Robertson-designed corrugating machines at work fabricating Youngstown Cold-Rolled Sheets in the production of Galbestos.*



This new industrial building is getting a long-lasting, weather-resistant Galbestos roof—one that will offer optimum resistance to both fire and corrosion. It will withstand a concentrated load and an impact load as well as a uniform load.

Pittsburgh's H. H. Robertson Company fabricates their Galbestos sheeting from Youngstown Cold-Rolled Sheets. That's because they require a basic raw material that combines minimum weight with great strength—and Youngstown more than meets the specification.

Wherever steel becomes a part of things *you* make, the high standards of Youngstown *quality*, the personal touch in Youngstown *service* will help you create products with an "accent on excellence".



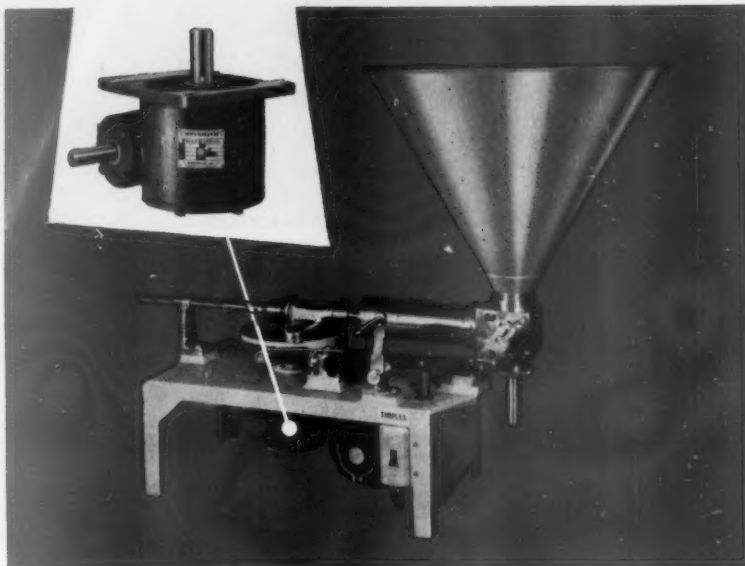
**Youngstown**

Youngstown, Ohio

THE YOUNGSTOWN SHEET AND TUBE COMPANY

*Carbon, Alloy and Yaloy Steel*

# Winsmith speed reducers help simplex piston fillers pack semi-solids in a hurry!



• Simplex Table Model "A" Piston Filler, driven by Winsmith "CV" Single Reduction Worm Gear Reducer of 60:1 ratio. Drive motor is 1/4 h.p. 1750 rpm, single phase.

**SIMPLEX PISTON FILLERS** are "force-feeding" semi-solids into containers at profitable speeds in hundreds of food packing and process plants. Manufactured by F. L. Burt Co., San Francisco, they are cycled to necessary precision by Winsmith Speed Reducers.

**WHY WINSMITH?** Says President F. L. Burt: "Winsmith was the first company with a wide range of sizes to fit our needs from stock." This includes outputs from 1/100 h.p. to 85 h.p. in ratios from 1.1:1 through 50,000:1 in full choice of shaft and mounting arrangements — such a complete selection that you're practically getting "custom" units from standardized stocks! Other big advantages of designing Winsmith Speed Reducers into your product are high output efficiency — maximum torque for the size of the package — dependability established over half a century.

**WINSMITH**  
SPEED REDUCERS

**WRITE TODAY** for Catalogs 155 and SM 57. See the "extras" that are standard in the Winsmith line!

**WINSMITH, INC.**

18 Sixth Street, Springville, (Erie County), N. Y.

For More Information Write No. 179 on Inquiry Card—Page 32

## Catalog Files

### SPEED REDUCERS

A four-page brochure detailing information on self-cooling fin and fan equipped speed reducers. Contains information on three basic styles, with capacities from fractional through 18 HP.

**Ohio Gear Company**

Write No. 13 on Inquiry Card—Page 32

### THERMOSTATS

Bulletin 8400 covers 19 major types of bimetal thermostats. The four-page form contains condensed technical data, operating ranges, and ratings. Includes a chart for quick conversion of centigrade and Fahrenheit temperature scales.

**Stevens Manufacturing Company, Inc.**

Write No. 14 on Inquiry Card—Page 32

### VALVES

A 12-page bulletin of valves, filters, and accessories. Catalog No. 300 presents a number of dimensions and pressure drop charts.

**Waterman Engineering Co.**

Write No. 15 on Inquiry Card—Page 32

### VARIABLE-SPEED DRIVES

Bulletin No. 195 describes variable-speed drives. Contains photographs, suggested applications, and cutaways. Also has information on horsepower, duty, enclosures, and electrical characteristics.

**Sterling Electric Motors, Inc.**

Write No. 16 on Inquiry Card—Page 32

### WORM GEAR JACKS

An eight-page brochure on worm gear jacks. Bulletin AD-66a features a sectioned illustration of the jack and its components. Also listed are specifications, applications, and drawings.

**Duff-Norton Co.**

Write No. 17 on Inquiry Card—Page 32

**PURCHASING**



# DRIVER-HARRIS manufactures the World's Largest Variety of Electron Tube Alloys for



This fact is of the utmost importance to every engineer engaged in the design and manufacture of tubes with greater reliability regardless of size.

Whenever tube engineers needed alloys of particular characteristics for cathodes, plates, grids, seals, etc., D-H has developed the proper metal compositions to meet their specifications.

Through vacuum melting and other types of close analysis control techniques, D-H research continues at an accelerated rate to improve the reliability of melt-approval techniques.

This is the reason for the great diversification of D-H electronic alloys . . . the reason why so many engineers turn to Driver-Harris for the production of the exact special-purpose alloys they need.

Prominent alloys of this group are: Nichrome\*, Karbo-met\*, Gridnic\*, Therlo\*, 499, 599, 152 Alloy, 142 Alloy, 146 Alloy and INCO Alloys 220, 225, 330.

Now several of these are supplied *exclusively vacuum melted*; others can be on specification. In all there are now over 132 D-H alloys available for electronic and electrical applications. If your alloy need cannot be satisfied by any of these, send us your specification and depend on it . . . Driver-Harris will produce it.

\*T.M. Reg. U.S. Pat. Off.

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MAKERS OF THE MOST COMPLETE LINE OF ALLOYS FOR THE ELECTRICAL, ELECTRONIC, AND HEAT-TREATING INDUSTRIES



AUGUST 3, 1959

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41

## For Round-the-Clock Security Against ...



VANDALISM



TRESPASSING



PILFERAGE



## Call the **ANCHOR MAN** —expert in industrial protection

How well are you protected from the financial drain of vandalism—from petty pilferage—from costly lawsuits due to injuries? If you have any doubts, call in your Anchor Man.

In a few minutes he can show you the many ways Anchor Fence is engineered for protection—for instance, how Anchor's exclusive square terminal posts give you added security by removing potential toe and hand holds. His visit could save you thousands this year alone.

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Plants in: Baltimore, Md.; Houston, Texas; and Whittier, Cal. Sold direct from factory branches and warehouses in principal cities.

For More Information Write No. 181  
on Inquiry Card—Page 32

## Letters To The Editor

### TODAY'S STANDARDS

Dear Sir:

As chairman of the N.A.P.A. Value Analysis-Standardization Committee, I want to express appreciation for the splendid coverage and write-up of the programs presented at the annual convention in New York.

Your complimentary statements of our film strip and workshop program "The Battle of the Century" gave us a lot of encouragement to keep stressing these two valuable purchasing techniques—value analysis and standardization.

Harlan E. Cross  
Chairman, N.A.P.A.  
Value Analysis-Standardization  
Committee

### MEASUREMENTS

Dear Sir:

I read with considerable interest Peter Baily's article, "A Yardstick For Measuring Safety Stocks" in the April 27 issue of PURCHASING Magazine. Mr. Baily modestly refers to the nomograph reproduced in the article as a "blunt instrument" for determining safety stocks "compared to the refinements of statistical methods."

I assume that one of the "sharper instruments" might be the formula presented by Spencer B. Smith in his article, "When Does It Pay to Run Out of Stock?" printed in your November 24, 1958 issue.

Putting the numbers cited by Mr. Baily's example ( $\frac{3}{8}$ " hex nuts) through Mr. Smith's formula:  $SS = K \sqrt{\text{average demand during lead time}}$  and solving for K, I come up with a K factor of .328 which according to Poisson distribution tables represents a protection of about 70%.

A 70% protection would lead one to expect approximately 30

stockouts per 100 order cycles. Mr. Baily's conclusion is that "between one and two deliveries out of a hundred may require emergency action to obtain receipt on time."

This is not quite the same as saying one could expect between one and two stock-outs per 100 orders. But it comes close to it and I presume this is what Mr. Baily had in mind.

Would it be possible to put Mr. Baily and Mr. Smith in touch with each other? I would like to know the answer and particularly whether I have misinterpreted either article.

F. C. Walters, Consultant  
N.A.P.A. Committee for Data  
Processing

● As Mr. Walters suggested, we have asked Mr. Baily and Mr. Smith to comment. Their answers will be reported in a later issue.

### SLIP OF THE TONGUE

Dear Sir:

This is in reference to "Traveling Requisition: The First Step Toward Scientific Purchasing" which appeared on page 80 in the May 25 issue of PURCHASING Magazine.

In the subtitle you mention Amerock Corporation as a "small manufacturer." Our company employs 1600 people with a plant covering 10 acres. I would like to know how you measure a small manufacturer and how you measure a large manufacturer.

W. H. Schnorenberg  
Director of Purchases  
Amerock Corporation  
Rockford, Illinois

● We are sorry for our awkward wording in the subtitle but we do realize, of course, that Amerock is numbered among the large industrial manufacturers.

For More Information Write No. 182  
on Inquiry Card—Page 32→  
PURCHASING

# FOR SAFETY'S SAKE BUY VACU-BREAK

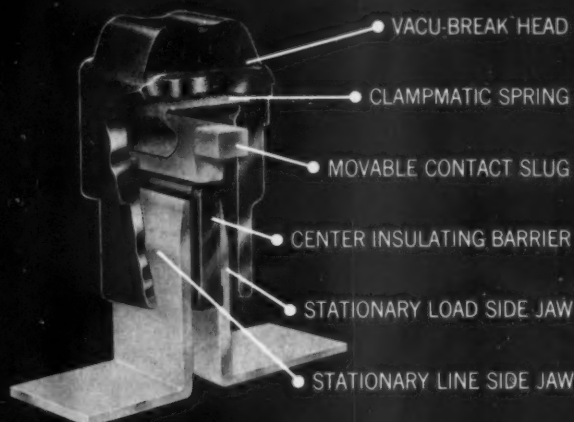


There's a big difference in safety switches—a difference between maximum safety and halfway safety—low maintenance and excessive maintenance. These differences are readily apparent when you look at the design and operation of the BullDog Vacu-Break Clampmatic® Safety Switch.

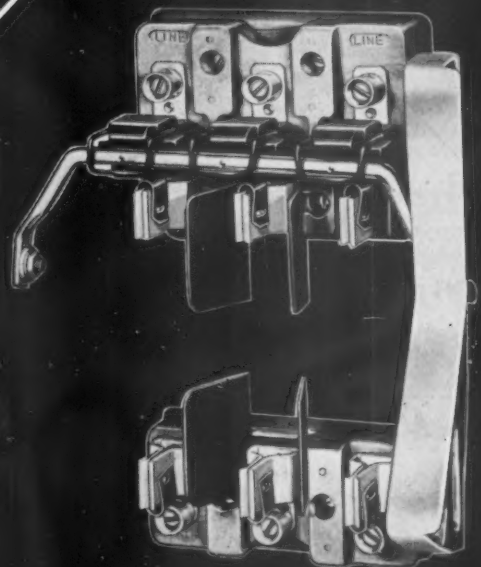
**THE VACU-BREAK:** Contacts are housed inside compact arc chambers which have very little air space. When contacts are "broken" under load, arcs can't build up because of the lack of oxygen. Pitting and burning of the contacts are reduced to the absolute minimum. Maintenance is virtually eliminated.

**POSITIVE SWITCHING:** For positive safety, the Vacu-Break switching mechanism does not rely on tricky toggles or springs to trigger the disconnect operation. The operating handle is directly connected to the contact heads by means of a sturdy metal rod. Push the handle "OFF" and the switch *is off!*

Vacu-Break heads are connected directly to the switch handle. No toggles or triggers . . . no tricky springs. No danger of switching failure, either. One of several exclusive BullDog Vacu-Break features that set the performance standards for the industry.



Close-up of Vacu-Break head shows movable contact slug inside the compact, oxygen-limiting arc chamber. Clampmatic spring assembly assures bolt-tight contact, speeds "break". This combination guarantees positive, safe operation, long switch life.



**WITHSTAND 100,000 AMP FAULT CURRENT:** Vacu-Break Clampmatic switches equipped with current-limiting type Amp-Traps\*\* were subjected to 100,000 amp short circuit current. *The switches were undamaged.*

*Play it safe!* Compare, recommend, buy . . . BullDog Vacu-Break Clampmatic Safety Switches. They cost no more than other switches . . . yet give you the maximum in safety and performance.

\*Vacu-Break and Clampmatic are registered trademarks of the I-T-E Circuit Breaker Company.

\*\*Amp-Trap is a registered trademark of the Chase-Shaunmut Company.



**BULLDOG ELECTRIC PRODUCTS DIVISION  
I-T-E CIRCUIT BREAKER COMPANY  
BOX 177 • DETROIT 32, MICHIGAN**

in Canada: 80 Clayson Rd., Toronto 15, Ont. Export Division: 13 East 40th St., New York 16, N.Y.



... where the house-mark is undeviating quality!



Stock Shapes—for rapid, low-cost fabrication

POLYPENCO Nylon and  
NYLATRON® GS  
POLYPENCO Teflon† TFE  
POLYPENCO Q-200.5  
(cross-linked styrene)  
POLYPENCO K-51 Penton‡  
POLYPENCO LEXAN††



NYLAFLOW® Pressure Tubing and Hose



Molded Parts—FLUOROSINT® TFE  
fluorocarbon resin  
NYLASINT® cold pressed  
and sintered parts

● When it comes to the really demanding jobs for industrial plastics—where deviation from the highest uniform quality may mean trouble—it pays to specify POLYPENCO. Solve your problems of in-plant production and end-product reliability today with the consistent high quality of POLYPENCO plastics, processed for uniformity in physical, chemical and electrical properties.

And you can get POLYPENCO Nylon, Teflon and other engineering materials in the widest range of stock shapes and sizes available . . . to produce your finished part.

Nationwide warehousing gives you immediate delivery, and the most up-to-date technical data and engineering help are always available to help you get the most practical, economical results. Write for the name of your nearest supplier.

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\*Trademark of The Polymer Corporation

†DuPont trademark for fluorocarbon resins

\*\*Hercules Powder Co. trademark for chlorinated polyether resins

††General Electric Co. trademark for polycarbonate resins



NYLATRON® GS  
Nylon Molding Powders

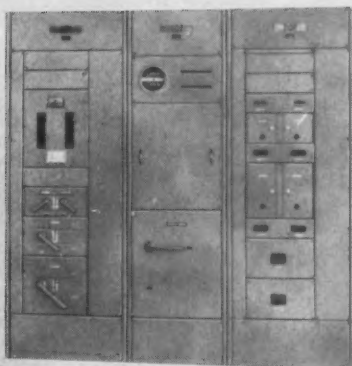


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Fusion Bond Finishes

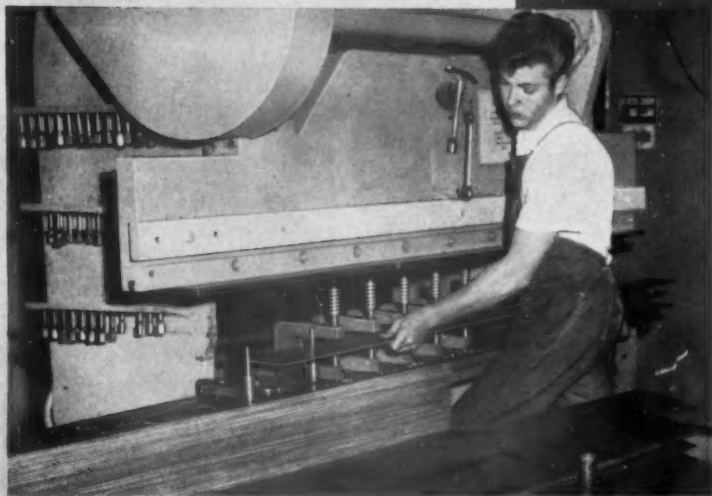




# Built better by "BULLDOG"... using THE COST-CUTTING STRIPPIT SYSTEM



Power switchboard  
by BULLDOG ELECTRIC. Fully  
interchangeable parts.



## PRESS SETUPS OFF THE SHELF! ➡

BULLDOG ELECTRIC stores Strippit drilled templates on conveniently located shelves, Strippit Hole Punching Units and Tooling on this mobile rack. Pilot pins on units slip-fit into template pilot holes for exact positioning, quick mounting outside press by bench man. All units reusable over and over in unlimited patterns.

## ➡ NO LOSS OF PRESS TIME!

Strippit setups cut between-run time to a minimum—just remove last set-up from press bed, insert new one and start run. Both short and long runs are profitable with Strippit setups. Here, parts for BULLDOG switchboards are being perforated accurately and rapidly. In other operations, Strippit Notching Units provide equal flexibility.

H. J. LOCKWOOD, Plant Superintendent, BULLDOG ELECTRIC PRODUCTS of Los Angeles writes:



"In building BULLDOG Switchboards to perfect uniformity for full interchangeability of parts, I have centered our production methods around Strippit tooling. All the perforating and notching operations are performed without fixed dies. Work flows smoothly through the machines without tieups. In no other way could we produce this quality product so efficiently."



**WRITE TODAY** for details on  
the savings you could be  
enjoying with Strippit setups  
on your presses!

# WALES STRIPPIT INC.

229 Buell Road, Akron, New York

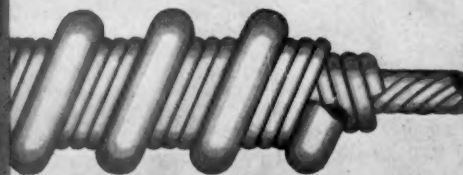
Manufactured in Canada by: Strippit Tool & Machine Company, Brampton, Ont.

For More Information Write No. 184 on Inquiry Card—Page 32

AUGUST 3, 1959

45

*How NS solved another  
special wire problem*



**REMOTE CONTROL** cable for jet aircraft is made of layers of high-tensile National-Standard wire wound around a stranded core. Heavy outer wire provides helix or worm-gear surface for meshing with hobbled wheels.

# Special National-Standard wire helps fly new jet-liners



When the age of commercial jet transportation in the U.S. began last January, giant jet-liners inaugurated flights across the country at speeds over 600 mph. To control these new aircraft swiftly and easily requires control cables of the utmost reliability, efficiency and endurance.

**NEW COMMERCIAL JET-LINERS**, as well as many military aircraft, are flying now with a unique remote control cable system made of special high-tensile wire wound around a stranded core with a heavy outer wire of stainless steel wound to a pitch of 10 per inch. This outer wire acts as a helix to engage hobbled wheels within the various system control boxes.

**NATIONAL-STANDARD ENGINEERS** worked closely with a control-cable system manufacturer to develop wire of just the proper alloy and rugged physical properties required to withstand extreme tempera-

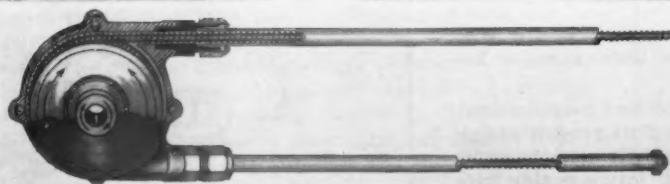
ture and flight stress variations. National-Standard submitted wire samples to microstructural studies and physical tests to assist the customer in determining the conditions that would allow bending cable around pulleys without giving a permanent set to the cable. In addition, alloy steels with various coatings were tested to improve wear and galling resistance for various applications. The result was the development of a special stainless-steel wire that exceeded rigid specifications.

**EXPERIENCED ENGINEERING HELP**, of this kind, for jobs requiring high-quality wire to meet special or unique applications, is available to you from National-Standard. For any of the many thousands of applications where only special wire will solve the problem, let National-Standard engineers go to work for you. Write for additional information to National-Standard Company, Niles, Michigan.

*Manufacturer of specialty wire and metal products*



**DIVISIONS:** NATIONAL STANDARD, Niles, Mich.; tire wire, stainless, music spring and plated wires • WORCESTER WIRE WORKS, Worcester, Mass.; high and low carbon specialty wires • WAGNER LITHO-MACHINERY, Secaucus, N. J.; metal decorating equipment • ATHENIA STEEL, Clifton, N. J.; flat, high-carbon spring steels • REYNOLDS WIRE, Dixon, Ill.; industrial wire cloth • CROSS PERFORATED METALS, Carbondale, Pa.; decorative, commercial, and industrial perforated metals.



**FLEXIBLE CABLE** engages accurately with specially hobbled wheels housed in control boxes. This combination requires special cable wire that will not take permanent set and will provide smooth, hard bearing surface for cable inside conduit.

**NATIONAL-STANDARD** engineers made intense microstructural and tensile studies of sample wire to find exact physical properties of the alloy to meet strict aircraft control specifications.





**Need the Most Accurate  
Precision Production Parts  
Available . . . RIGHT NOW?**

## **EX-CELL-O CAN MEET YOUR DELIVERY DATE!**

Service—like quality and accuracy—is another reason why precision-machined production parts have been a major Ex-Cell-O product line for nearly 40 years.

Ex-Cell-O's facilities for production of aircraft and miscellaneous precision parts and assemblies include: complete product design and development service; a full range of metalworking skills and equipment; in-plant laboratory control to insure quality from raw stock to finished product; modern heat treating methods; up-to-date testing and inspection devices and techniques; and the production experience required to deliver any quantity of precision parts you need—when you need them!

Contact your local Ex-Cell-O Representative, or send your print or specifications directly to Ex-Cell-O for a prompt quotation.



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**EX-CELL-O**  
CORPORATION  
DETROIT 32, MICHIGAN

59-63





**XLO**

EX-CELL-O FOR PRECISION

**Need the Most Accurate,  
Longest-Lasting Drill Jig Bushings  
on the Market . . . RIGHT NOW?**

58-14

**EX-CELL-O CAN SHIP THEM TO YOU TODAY!**

Ex-Cell-O stocks more than 10,000 different standard size Drill Jig Bushings at key points throughout the country for same-day shipment to your plant regardless of location. Thousands of semifinished bushing blanks on hand speed orders for special sizes. Ex-Cell-O Drill Jig Bushings last longer because they're made better. Hole hardness is maintained at 62-64 Rockwell "C" with chrome-alloy bearing steel, heat treated with the most modern methods.

Order from the Ex-Cell-O Drill Jig Bushing inventory nearest you: Contact Ex-Cell-O Corporation in Detroit, New York, Downey, Calif., Cincinnati, Ohio and London, Canada. Write for Ex-Cell-O's Drill Jig Bushing Catalog today.

**EX-CELL-O**  
CORPORATION  
DETROIT 32, MICHIGAN

*Machinery Division*

MANUFACTURERS OF PRECISION MACHINE TOOLS • GRINDING  
AND BORING SPINDLES • CUTTING TOOLS • TORQUE ACTUATORS •  
RAILROAD PINS AND BUSHINGS • DRILL JIG BUSHINGS • AIRCRAFT  
AND MISCELLANEOUS PRODUCTION PARTS • DAIRY EQUIPMENT

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## Cut...Shaved...Ground...made from Punched or Turned Blanks...Ultra-Precision SPUR GEARING for all needs



**GEAR**  
**Specialties, Inc.**

2635 WEST MEDILL AVENUE  
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SPURS • SPIRALS • HELICALS • BEVELS • INTERNALS  
WORM GEARING • RACKS • THREAD GRINDING

WORLD'S LARGEST EXCLUSIVE MANUFACTURERS  
OF FRACTIONAL HORSEPOWER GEARING

Whether you make appliances—sewing machines—office machines—instruments—or any other product which incorporates Spur Gearing, put your requirements in the capable hands of G.S. engineers and expert craftsmen.

"Precision" is the hallmark of all G.S. production—and rigid quality control systems keep that precision at its highest point all the way through quantity runs into the thousands. With the finest and most modern equipment in every department, with four-decade veterans in engineering, supervision and on the machines, we needn't (and don't) make any compromises with top quality in whatever we produce for you.

We're proud of the "blue ribbon" roster of customers—some of the largest, some of the smaller specialists—who have been relying on G.S. for years, whether their needs involve Spurs or some other form of Small or Intermediate Precision Gearing. Bring your Gear problems to G.S.—it's a great team to have behind your production!

SEND FOR G.S. illustrated folder! See where and how we mass-manufacture Small Gearing to uniformly fine tolerances. Folder contains 23 pictures of Small Gears, plant view, as well as Diametral and Circular Pitch Tables. Ask for your copy on company stationery, please!

*43 Years of Specializing in Small Gearing!*

For More Information Write No. 187 on Inquiry Card—Page 32

## Purchasing People In The News

**E. F. Andrews** has been named director of purchases at **Allegheny Ludlum Steel Corporation**, Pittsburgh, Pa. Mr. Andrews was



**E. F. Andrews**

one of seven named to new posts in a reorganization of the company's purchasing division. **L. H. Bittner** will remain vice president—purchases.



**N. W. Haysort**

Two new purchasing departments were created. They will be headed by **N. W. Hayson**, who was named manager, maintenance, repair and operating sup-

plies department; and **A. B. Wadsworth, Jr.**, who was named manager, raw materials, equipment and construction department. Mr. Wadsworth is the past president of Purchasing Agents Association of Pittsburgh. **R. G. Hemphill** and **W. R. Solomon** were named senior buyers. **J. M. McCague** and **P. K. Simboli** were appointed buyers.



**A. B. Wadsworth, Jr.**

Mr. Andrews, formerly assistant to the vice president in charge of purchases, joined Allegheny Ludlum last fall. Before that he has been director of operations, biological laboratories, for **Pitman-Moore Co., Indianapolis, Ind.** Prior to that appointment, he was for ten years director of purchases of Pitman-Moore.

Mr. Andrews is a graduate of Butler University, Indianapolis. He has done graduate work in industrial administration (Program for Executives) at Carnegie Institute of Technology, and has been an instructor in purchasing at the School of Business Administration, Butler University. He is a past president of the National Association of Purchasing Agents.

**Spaulding Fibre Company, Inc., Tonawanda, N. Y.**, has announced the appointment of **William**

**Hutchins** as purchasing agent. He replaces **Walter L. Grieser** who resigned. Before his promotion, Mr. Hutchins had been purchasing agent of the New England division of the company. He holds a degree in Business Administration from the University of New Hamp. Mr. Hutchins is a member of the Industrial Management Council and the New England Purchasing Agents Association.

**Angus MacDonald** has been named vice president in charge of purchasing, **The Quaker Oats Company, Chicago, Ill.** Mr. MacDonald had been director of pur-



**Angus MacDonald**

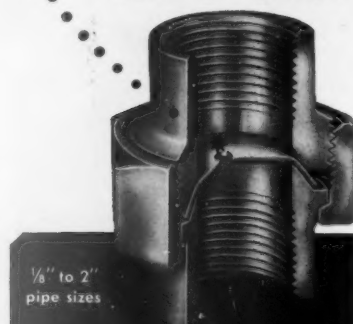
chasing since January, 1959. Previously he was manager of the company's Akron plant. He joined the company in 1932 as a millwright helper at Peterborough, Ontario. After assignments at the company's Chicago headquarters, he was named superintendent of the St. Joseph, Mo. plant in 1946. He became assistant manager there two years later. He went to Akron as assistant manager in 1953.

**SEE PAGE 106 FOR MORE  
PURCHASING PEOPLE IN  
THE NEWS**

here's real **ECONOMY...**  
time-saving **SIMPLICITY...**  
and  
sure-fire **DEPENDABILITY**  
for metering, measuring,  
controlling any piped material!



this  
Catawissa  
Cup-Orifice  
Plate CONVERTS  
any standard  
Catawissa Union into a  
**GASKETLESS  
ORIFICE UNION**



**ELIMINATES** the necessity of  
expensive gaskets...the uncer-  
tainty of what type gaskets are  
needed for specific temperature  
and pressure requirements...  
fumbling with extra parts!!!

Orifice Union problems of the past are gone  
forever! Stainless or carbon steel cup-orifice  
plate fits easily, quickly, securely to form a  
good, tight, leakproof seal. Temperature and  
pressure requirements are restricted only by  
the rating of the union itself (3000-lb. serv-  
ice, 9000-lb. test)!

Just specify  
"Catawissa Cup-Orifice Plates"  
or "Catawissa Cup-Orifice Unions"  
at your favorite supply store—or write for  
catalog and complete information.

**CATAWISSA VALVE & FITTINGS CO. —**

**CATAWISSA • PENNSYLVANIA**

For More Information Write No. 188  
on Inquiry Card—Page 32

## FOB—"filosofy of buying"

P.A.'s GET in the news other ways, too. Mrs. Margaret Priebe, lovely mother of four just crowned Mrs. America, is the wife of P.A. Clarke Priebe of Des Moines. P.A. Priebe said he was proud and happy to see his wife win the title, although she'll spend much of the next twelve months travel-  
ing.

Sylvia F. Porter, noted woman columnist gave P.A.'s a different kind of publicity. She picked out a purchasing agent as the villain in an example of extra-marital dallying in modern business of-  
fices. It's bad enough to single out one of our group from among illegally romantic salesmen, ac-  
countants, office boys, vice-presi-  
dents and whatnot, but that's not  
what has us boiling. In describ-  
ing how management handled the  
situation Sylvia went on to say  
"... but these approaches apply  
only to the lower levels."

Where have you been Sylvia?  
Don't you know that today's pur-  
chasing agent—philanderer or not  
—is part of top management?

"In most cases" says reporter  
Mike Gross, "the record buyer  
is easy game for the distributor  
since the average salary for the  
job runs to about \$6,000 annually.  
Distributor gratuities run from  
lunches to taking care of house-  
hold needs, such as washing ma-  
chines, TV sets, etc.

"The deejay payola is begin-  
ning to look like small potatoes  
with the supermarket buyer  
move-in since the deejay can get  
the record only on his turntable,  
but the buyer can be responsible  
for hundreds of thousands of dol-  
lars worth of business."

It's hard to pass judgment on a  
story like this because it's so far  
removed from our field. One thing  
is clear, though. Supermarkets  
may do serious harm to one part  
of their business if they push  
some of today's records very  
hard: Anyone hearing Fabian  
mouth "Ah'm A Tiguh" would be  
too sick to eat for a week.

**PAYOLA GOES** to Supermar-  
ket. Record Buyers in DeeJay  
Class."

Man, it's takin' this Vintage-34  
cat a long time to dig this jive,  
but it's finally gettin' through.  
The quote above isn't a transcript  
of a couple of hipsters' conversa-  
tion. It's a story headline from  
Variety, the bible of show busi-  
ness. The story reports that buy-  
ers for supermarkets are being  
paid off by record manufacturers  
who want to place their LPs in  
that lucrative market. Record-  
makers, it says, used most of their  
bribe budgets on disk jockeys to  
drum a popular tune into the  
popular mind. Now apparently,  
says Variety, they get bigger re-  
turns by giving gratuities to buy-  
ers who are "easy to sway" since  
most of their buying experience  
has been in groceries, drugs, and  
sundry other supermarket items.

**IT'S A TIE!** We've decided to  
award duplicate prizes in the  
great "What Should We Do With  
the Lighter" contest (F.O.B. Apr.  
27 and July 6). Mr. R. O. Martin,  
procurement manager, Vitro Lab-  
oratories, Eglin Air Force Base,  
Florida, and Mr. C. E. Thompson,  
Berks Engineering Co., Reading,



"Mr. Grover, after great delibera-  
tion, we have decided to let you  
supply us exclusively."



Pa., so skillfully presented two points of view that it was hard to choose between them.

Here's what Mr. Martin said:

"You have no problem—keep the lighter!

"It accompanied a news release which I would consider propaganda material. The sender couldn't possibly have the objective of compromising your principles. It would appear it was more for purposes of enlightenment. (Ed. note: Mr. Martin, you ought to see the flame on that lighter. It brightens up the whole office.)

"My opinion is that this item definitely falls into the category of advertising materials."

Mr. Thompson takes another tack:

"No siree! Since you are one of those guys advocating the non-acceptance of Christmas gifts, then it is beholden of you to return the lighter.

"If acceptance of a Christmas gift is detrimental to the conduct of a P.A., then the same can be said for management or any other employees.

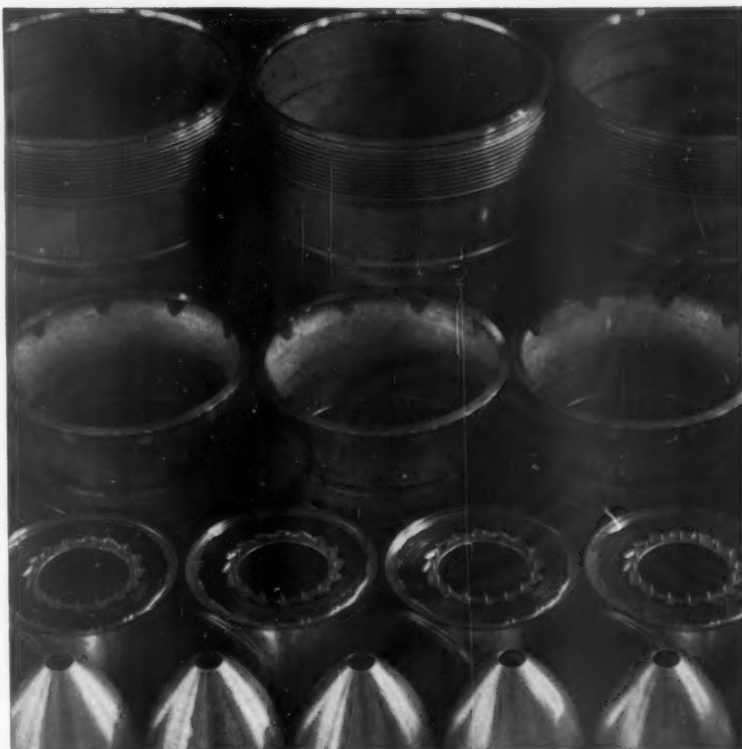
"The same theory should hold true throughout the entire year, regardless of the occasion or time. Naturally, this would cover anything—golf games, dinners, theatres, baseball, football, boxing, even open house.

"My suggestion is either keep the lighter, and shut up about the other gifts."

There you are. Both winners will receive a paperback copy of Machiavelli's "The Prince" as awards. A consolation prize will go to Mr. F. L. Jones, director of purchases, Nopco Chemical Co., who suggested we solve the dilemma by sending the lighter to him.

What are we going to do with the lighter? Why, precisely what both winners suggested—keep it. But we're still puzzled by the incomplete alternative offered by Mr. Thompson. Did he mean what he said, or did he mean to finish that last sentence with "... or return the lighter and keep up your noble campaign against gifts for P.A.'s?"

Anybody want to start another contest?



## high temperature

### AVIATION COMPONENTS BY LAVELLE

Lavelle manufactures aviation components to meet the most critical demands of high temperature operation. Typical of the many high temperature units produced in quantity by experienced Lavelle craftsmen are the jet engine tail pipes, engine casings and heat exchangers shown above.

Lavelle specializes in the production of precision sheet metal weldments and assemblies made of titanium, aluminum, stainless steel, and heat-resistant nickel alloys... joined by welding methods applicable to specific component design and function. Where required, special tools are designed and fabricated by Lavelle to maintain production quality, reduce costs... and promote on-schedule delivery.

If your requirements for component performance demand the very highest standards of component workmanship, call on Lavelle... or write for brochure describing specialized skills and facilities ready to serve your needs.



**LAVELLE AIRCRAFT CORPORATION • NEWTOWN, BUCKS COUNTY, PA.**  
Between Philadelphia, Pa., and Trenton, N.J.

For More Information Write No. 189 on Inquiry Card—Page 32

**BRIDGEPORT  
NICKEL  
SILVER  
SHINES  
AT  
THE  
SYMPHONY**

H. N. White Company, Cleveland, Ohio, imparts "instrumental beauty" to its line of King saxophones, flutes, trombones and French horns with Bridgeport Nickel Silver (Alloy 565). This alloy comes to them in strip form, Class B Finish, Soft and Ductile, and is skillfully formed. Material requisites for this operation are consistent in specification and color. White instruments must be beautiful as well as functional for long and flawless service.

This *standard* Bridgeport alloy adds strength and beauty to many products. Its silver color and exceptional ductility

lend themselves to the highest quality hollow ware and tableware for severe use (as in hotel and home service); to zippers, costume jewelry, etching, name plates, camera parts, optical goods and electrical applications.

Nickel Silver is only one of the many standard Bridgeport alloys. You may not be in the business of manufacturing musical instruments; however, your product may need a copper base alloy with the uniformity that H. N. White Company gets from Bridgeport's Nickel Silver. To find out how we can help you, call us or write Dept. 3709



**BRIDGEPORT BRASS COMPANY**  
Bridgeport 2, Conn. • Sales Offices in Principal Cities  
*Specialists in Metals from Aluminum to Zirconium*

## Highlights of This Issue

### ✓ Buying Specials—In Low Volume

Two features in this issue deal with a special buying problem faced by some of our newer industries—the purchase of large numbers of non-standard items in relatively small amounts. The first article describes techniques and methods used in buying components for rockets and missiles. It stresses the need for adapting to rapid changes in design and requirements, particularly in buying for research and production. The second deals with the problems involved in handling “rush” requirements in a company making custom-made defense items. The P.A.’s formula for doing an efficient job includes two important factors: close control of paperwork; careful cultivation of vendors. See pages 59 and 66.

### ✓ Let a Machine Do the Work

Pencil-pushing and key-pounding in purchasing and receiving should be going (at least partly) the way of stone-cutting. New office machines are making it easier to cut down on clerical labor and red tape. One time-saver is a copying machine now being used: (1) to eliminate a great deal of paperwork in receiving, especially on partial shipments; (2) to eliminate completely purchase order typing when emergency requisitions come to purchasing. See page 64.

### ✓ How's Your Performance?

One of the hottest questions of the day in purchasing: How do you measure buyer performance? Maybe there's a neat little answer, maybe there's no real answer. At any rate some first-rate minds are at work on the question. Some preliminary observations are offered by the chairman of the group now writing a manual on purchasing performance for the National Association of Purchasing Agents. See page 68.

### ✓ A Look At Standardization

How do you start a standardization program? The first step is to determine how many items are already standard. This article discusses methods of determining this. See page 71.

#### In Future Issues

The P.A. as Business Forecaster—Purchasing as a Management Function—Purchasing Attacks Transportation Costs—New Ideas in Forms.

NEW FROM CONTINENTAL

Electrically welded,  
leakproof

## flaring pails

nest to save storage  
and shipping costs



### Single seam construction

SINGLE  
ELECTRICALLY  
WELDED SEAM



gives leakproof  
protection for  
hard-to-hold products

Ideal for liquid roofing cements, paint and petroleum products, dry or powdered materials. Ask your Continental man for details.



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Eastern Division: 100 E. 42nd Street, New York 17  
Central Division: 135 So. La Salle St., Chicago 3  
Pacific Division: Russ Building, San Francisco 4  
Canadian Division: 790 Bay St., Toronto, Ont.  
Cuban Office: Apartado 1709, Havana

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on Inquiry Card—Page 32

# SOLVING PROBLEMS COMES EASY WITH SAGINAW <sup>b/b</sup> SCREWS!

-  **EXCESSIVE POWER CONSUMPTION**
-  **SPACE/WEIGHT PROBLEMS**
-  **PRECISE POSITIONING**
-  **TEMPERATURE EXTREMES**
-  **LUBRICATION**
-  **DEPENDABILITY**

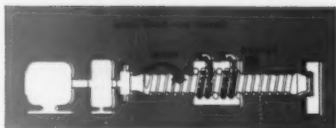
## THE MINIATURE b/b SCREW

Used where miniature positioning/control precision and dependability is essential in telemetering and guidance systems, antenna coupler tuning, and similar diminutive actuating applications.

## THE SAGINAW b/b SCREW

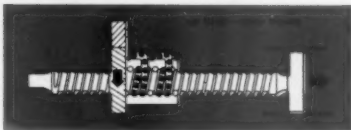
Used in afterburner controls, elevator positioners, as speed brake actuators, in clamping mechanisms for missile boosters, and many other applications.

**ACTUATE AND POSITION WITH OVER 90% EFFICIENCY... 4/5 LESS TORQUE!**



**SCREW TRAVELS:** When rotary motion is applied to the b/b nut, the screw glides along its longitudinal axis on rolling steel balls, converting rotary force and motion to linear force and motion with unprecedented efficiency.

**NUT TRAVELS:** When rotary motion is applied to the screw, the b/b nut glides along the axis of the screw on rolling steel balls, converting rotary force and motion to linear force and motion with 4/5 less torque than acme screws.



- 1 SAVES POWER.** Operates with almost 100% efficiency. Saginaw b/b Screws permit much smaller motors with far less drain on electrical systems, also simplify circuitry.
- 2 BROAD TEMPERATURE TOLERANCES.** Normal operating temperature for Saginaw b/b Screws is from -75°F. to +275°F. In selected materials they will function efficiently at temperatures as high as +900°F.
- 3 SPACE/WEIGHT SAVINGS.** Saginaw b/b Screws are compact. They permit smaller, lighter motors and gear boxes and eliminate cumbersome auxiliary equipment.
- 4 NO LUBRICATION NEEDED.** If lubrication fails, the Saginaw b/b Screw will still function with remarkable efficiency. Units have been built and qualified for operation without lubrication.
- 5 POSITIONS PRECISELY.** Saginaw b/b Screws will position components far more precisely than hydraulics or pneumatics; tolerances on position are held within .0005 in./ft. of travel.
- 6 DEPENDABLE PERFORMANCE.** Saginaw b/b Screws are far more reliable than hydraulics or pneumatics. Gothic-arch grooves, yoke deflectors and multiple circuits provide added assurance.

**SEND TODAY FOR FREE 1959 ENGINEERING DATA BOOK...**  
or see our section in Sweet's Product Design File

Available in custom machine-ground and stock rolled-thread types. Units have been built from 1½ inches to 39½ feet long—⅜ to 10 inches in diameter.

Saginaw <sup>b/b</sup> bearing Screws and Splines

SAGINAW STEERING GEAR DIVISION OF GENERAL MOTORS • SAGINAW, MICHIGAN  
WORLD'S LARGEST PRODUCER OF BALL BEARING SCREWS AND SPLINES





## Let's Not Be Beastly Buyers

IT'S SUMMERTIME and the livin' is easy, and it's hard for an editorial writer to keep up the carping and railing expected of him during the rest of the year. Things are fairly quiet in Washington, the full effect of the steel situation is yet to be felt, and no great cosmic issues are disturbing the purchasing profession at the moment. Maybe this is the time for a few mild comments on a small but important problem often overlooked in the hurly-burly of business—purchasing department manners.

The inspiration comes from a purchasing agent friend just returned from Europe. Up to now, curiously enough, he had little interest in manners and a certain contempt for anyone who attached importance to them. But he came back praising the manners of the British. "We could take some lessons from them," he said. "A little attention to the niceties—particularly in business—makes life a lot more pleasant."

We don't think courses in Old World courtesy are needed by most New World purchasing agents. Some of our pleasantest hours have been spent in purchasing offices big and small in most of the 49 states. But we have other friends, too, who have regular contacts with purchasing departments and who take a rather dim view of the type of pleasantmanship practiced by a few of the head men therein. The critics are few in number, to be sure, but they're influential. What they tell others about their treatment by P.A.'s can seriously affect the reputation of purchasing agents in general. Some of their judgments of what's right and what's wrong with purchasing conduct are passed along in the public interest, couched in currently popular terms:

Growling and mumbling on the telephone are out. Slamming the 'phone down is out. Thank you is in. Shaking hands with salesmen (these are the friends referred to above) is in. Smiling is in. Fake smiling is out. Blowing cigar smoke in a salesman's face is out. If it's his cigar, it's in. Snarling at menials and fawning on superiors is out. Keeping appointments is in. Letting salesmen cool heels needlessly is out. Complaining about how tough a job you have is out. (We're all in the same boat). Giving the impression that the intercom call is from The Chief when it's only from the stockroom clerk is out. Yawning in the middle of a sales pitch is out. Addressing people by name—especially by correct name—is in.

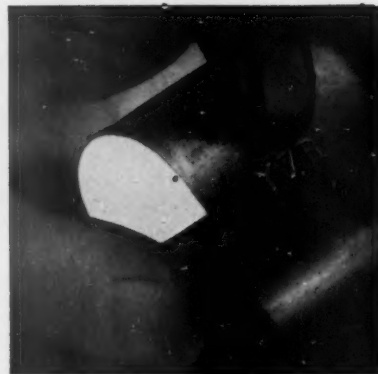
You can continue the list. Suffice it to say here that courtesy can be its own reward, even though a lot of people are embarrassed enough by common decency to claim "it's just good business." Nice guys may finish last—but they have the consolation of knowing they're civilized.

PURCHASING MAGAZINE  
AUGUST 3, 1959

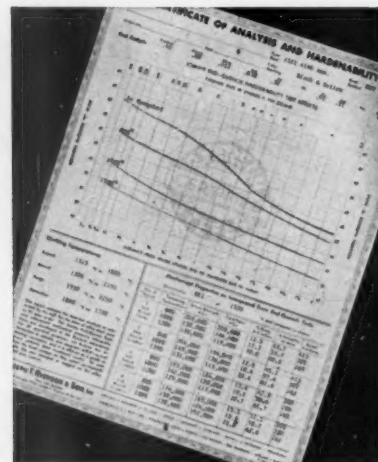
*Paul V. Farrell*



Spark testing by skilled Ryerson inspectors protects against possibility of mixed steels.



Every bar is identified by its own particular heat symbol and color marking, to indicate type of alloy.



With every shipment you receive a Certificate of Analysis and Hardenability—your complete record of the steel's characteristics, and your guide to dependable heat treatment.

## How Ryerson takes the risk out of your alloy steel

Alloys from different heats can vary widely in hardenability—and as a result, vary just as widely in mechanical properties.

This puts a big question mark on how your steel will perform. Moreover, you may not know you have a problem until it's too late.

The big difference with Ryerson is—you know what to count on before you start. Every bar of Ryerson alloy steel is protected by an 8-Point Quality Control Program—including identification by spe-

cific heat as well as by type; spark testing to avoid mixed steels; and complete hardenability tests in accordance with A.S.T.M. specs. This enables us to send you a report on every shipment of alloy steel . . . a report telling you what your steel will do, and how to heat-treat to obtain desired properties.

These are the plus benefits you get at no extra cost when you order alloy steel from Ryerson. Call your nearby Ryerson plant today. . . or ask your Ryerson representative to explain our certified plan.

Principal products: Carbon, alloy and stainless steel—bars, structurals, plates, sheets, tubing—aluminum, industrial plastics, metalworking machinery, etc.



# RYERSON STEEL

Member of the **INLAND** Steel Family

PLANTS AT: NEW YORK • BOSTON • WALLINGFORD, CONN. • PHILADELPHIA • CHARLOTTE • CINCINNATI • CLEVELAND • DETROIT • PITTSBURGH  
BUFFALO • INDIANAPOLIS • CHICAGO • MILWAUKEE • ST. LOUIS • DALLAS • HOUSTON • LOS ANGELES • SAN FRANCISCO • SPOKANE • SEATTLE

For More Information Write No. 192 on Inquiry Card—Page 32



*Purchasing for the rocket and missile industry isn't like mass-production buying. Standards are few, lead times are short, and quantities are small. But basic techniques and policies can be streamlined to meet the challenge of the space age.*

**By J. J. Nelsen**

**W**E LITERALLY buy for space. Our corporate name—Space—is derived from the company's products—specialized propulsion and control equipment. The bulk of what we make is used in various

*When this article was written, J. J. Nelsen was manager of procurement for Space Corporation, Dallas, Tex. He has just been named materiel manager.*

## Buying for Space

ways in the field of rockets and missiles.

Dealing in a market so new and undetermined, we face some tough purchasing problems. For example:

- Very few of our purchased parts are standards, in any sense of the word. The advantages of buying catalog items in large quantities just don't exist for us.

- We buy not only for production, but for research and development. This means that complex technical situations present

themselves regularly. Designs and requirements change at a moment's notice, and the releases often come to us in a most unorthodox manner, to say the least.

- The complex nature of our purchases and the short lead times we have require the closest kind of cooperation with vendors.

- Despite the fact that our annual purchases total only about \$5 million, we process about 1200 purchase orders a month, plus all sub-contracts for outside shop work and services. (Average lead

Advance information on certain major items is released by engineering to give purchasing a few days extra lead time before formal requisitions are received. Action taken is recorded by purchasing on this form and distributed to interested departments.

time on each order is less than seven days.)

This department must be flexible and avoid bogging down when handling crash programs or emergency purchases. We have developed and rely heavily on a concise system of forms and methods to maintain our efficiency. This is how our system works:

**REQUISITIONS:** Requisitions come from three sources: manufacturing-scheduling for production requirements; research and development; and field service for items needed in our various installations. Before the 3-part standard form gets to procurement, it is checked in inventory control against stock on hand. In procurement, a buyer completes the form, and issues a purchase order.

**MAJOR ITEMS LIST:** On certain major items—hydraulic cylinders, wheels, instrumentation, etc.—engineering releases a Major Commercial Items List (MCI) to allow purchasing a few extra days of lead time. This is furnished on a 15" x 27" sepia master. It contains descriptions, dimensions, specifications and other technical data to enable the buyer to issue a request for quotation or order. It also has space for the name of the vendor, cost breakdown, price, vendor's delivery ability, and purchase order number.

Confirming requisitions are received from scheduling when the job release is made. As items are bought by purchasing, a blue-line reproduction is developed from the sepia and distributed to engineering, scheduling and estimat-

PURCHASING DEPT COST CONTROL									
MAJOR COMMERCIAL ITEMS					PURCHASE REQUESTION				
REQ. NO.	DATE	BY	FOR	ESTIMATE NO.	ESTIMATE DATE	ESTIMATE PRICE	ESTIMATE TOTAL	ESTIMATE UNIT PRICE	ESTIMATE TOTAL
31-5031	12/3/58	Whatley	Whatley	5175	12/1/58	5175	5175	5175	5175
REQUISITION NO. 31-5031					PURCHASE REQUESTION				
REQUISITIONER: Whatley					SPACE CORP.				
DEPT. NO. 31					P. O. BOX				
DELIVER TO: Whatley					5175				
Material and/or Service required by DATE 12/3/58					DALLAS, TEXAS				
(This Space for Purchasing Use Only)					The Material or Service on this order for use on a Government Contract: YES <input checked="" type="checkbox"/> NO				
SHIP TO: Dallas, Texas					F. O. B. Vendor's plant				
VIA: Air Mail					TERMS: Net 30				
REQ. NO.	DATE	BY	FOR	ESTIMATE NO.	ESTIMATE DATE	ESTIMATE PRICE	ESTIMATE TOTAL	ESTIMATE UNIT PRICE	ESTIMATE TOTAL
1.	12/3/58	Whatley	Whatley	5175	12/1/58	5175	5175	5175	5175
DESCRIPTION					UNIT PRICE				
Gasket, 1/16 x 2-7/16" L.D. x 3-11/16" O.D.					29 ea				
Neoprene 40 Duro					20 ea				
Fabricate complete per sketch - Vendor to furnish material									
Reqs. 31-5031									
Tel. Quote Roberts to Horne									
CONFIRMATION - DO NOT DUPLICATE									

Verbal orders are often given to suppliers right from the requisition, then followed by a confirming order.

ing. This provides them with pertinent information several days ahead of the routine distribution of purchase order copies.

**PURCHASE ORDERS**—Our 12-part snapout order is distributed to vendor (2), scheduling, receiving, receiving inspection, engineering, accounts payable, cost control, controller, estimating, and purchasing (2). Each department sets up a file to follow the progress of the flow of materials into our plant. Where there is any hitch in the receiving, inspecting, or processing of any

purchased materials, our department is notified immediately.

Because of short lead time, our routine purchase order is often comparable to an emergency order in a more standardized business. But sometimes our lead time drops from days to hours. In this case, the requisition is walked through the same routing as a normal requisition. When it is brought to purchasing it is given priority over all other requisitions. If the item can be obtained from a local vendor, a pick-up order is issued immedi-



**IMPORTANT      IMPORTANT**  
**READ      THIS**

1. Do not substitute any items on this purchase order without obtaining written permission.
2. Full requirements must be shipped on all items. For example, if order calls for 100 bolts, 99 will not be considered complete.
3. Sign and return acknowledgment copy (blue) at once. Acknowledgment must be signed by a company official and returned within five (5) days. Space will consider order "not accepted" if acknowledgment copy is not returned within five days. Space reserves the right to cancel the order and seek another vendor.
4. All requests for descriptive literature, reproducible drawings, certified prints and Operating Maintenance Instructions must be complied with prior to first shipment against purchase order.
5. Reproducible drawings, when requested in purchase order, must be furnished in accordance with MIL Spec. 8813, Class C, Par. 3.3 4.1 (see attached). Vendor must furnish formal letter of refusal if you cannot comply.
6. No invoice will be processed for payment until all requests set out in Items 4 and 5 (where applicable) are received.
7. Do not over ship. Cost of handling over shipments will be charged back to vendor.
8. Each part must be properly stamped or tagged with manufacturer's part number for identification. Failure to do so will be grounds for delay in invoice payment.
9. A certified letter of conformance to specifications, when requested, must be supplied with one copy accompanying the packing sheet in each shipment two (2) copies to be mailed to the Buyer.
10. Delivery dates set forth in purchase order are Space need dates not vendor shipping dates.
11. When deliveries cannot be made on schedule, vendor should furnish Buyer a letter stating reason for delay and indicating when to expect shipment. When a delayed shipment is made, please wire date shipped, waybill number and routing.
12. Packing list must reference purchase order number and item number on purchase order.

Failure to comply with the requirements set forth above will automatically give Space Corp. the privilege to figure discount time from date of compliance rather than from date of invoice.

YOUR COOPERATION IN COMPLYING WITH REQUIREMENTS SET FORTH ABOVE WILL  
ENABLE SPACE CORP. TO ESTABLISH YOUR CONCERN AS  
A PREFERRED VENDOR.

These conditions are made a part of PO 548-S-8326 - Joe Dokes Mach. Wks.

Special sheet of instructions is issued with each order for production materials and becomes part of the order.



J. J. Nelsen, materiel manager (l.), Maurice G. Hughett, president; and Col. D. Harold Byrd, chairman, (r.), discuss purchasing aspects of a new contract.

ately. If an out-of-town vendor is needed, the buyer either wires or telephones the order, giving a purchase order number. The actual order is then typed immediately and airmailed. The body of the purchase order indicates that it is a confirming order.

### "Once-A-Month" Orders

We use what we call a "once-a-month purchase order" to procure MRO supplies, miscellaneous hardware, office supplies, etc. Basis of the plan is rotation of selected vendors: Vendor A will get the order requirements of a certain item for one month, Vendor B for the following month, and vendor C for the third month. Rotation starts again after the third or fourth month. The system has enabled us to cut down considerably on issuance of purchase orders for single items. It works this way:

An order is made up specifying the item, and the price, but no amount. Releases against the order are phoned in to the supplier selected for that month. Meanwhile, the rest of the order copies are placed in a special file and a dummy copy is sent to receiving to permit them to receive against the order. Receiving reports are forwarded to purchasing daily.

On the 25th of the month purchasing totals all the receiving reports and completes the original purchase order. The remaining copies are then distributed and processed in the normal manner.

Rotation of once-a-month orders has enabled our buyers to measure the efficiency and performance of various vendors and to compare their quality and prices.

**NEGOTIATION OF CONTRACTS AND SUB-CONTRACTS**—One of our most interesting and challenging duties is subcontracting for outside production that goes beyond our own diversified manufacturing operations.

Subcontracts are generally handled on a regular purchase order, supplemented by what we call a "Scope of Work." For sub-

P. O. BID TABULATION				QUOTATIONS RECEIVED FROM:			
				1-Smith Co.	2-Jones Inc.	3-Brown Bros.	
				St. Louis, Mo.	Kansas City, Mo.	Los Angeles, Cal.	
				SALESMAN J. Harria	W. Johnson	B. Morris	
				TELEPHONE			
				DATE			
ITEM	QUANT.	UNIT	DESCRIPTION	Unit Pr.	Amount	Unit Pr.	Amount
1	5	ea.	All services incidental to the preparation and publication of a non-classified handbook for Job 548 (Contract N000(00)00000) as described in IFB "Publication Contract Requirement Serial No. 405-58 Item 1A and C" and in accordance with Specification XMA 00 - Price to include necessary liaison and guarantee of service acceptance.	\$4578.00		\$4612.00	\$4489.00
AWARDED TO LOW BIDDER							
Brown Bros.							
Los Angeles, California							

Nine-part form permits typing four quotation requests and acknowledgments in one pass. Vendor's copy shows only his name. Purchasing maintains bid tabulation for reference when same item is required in a new project.

contracts covering major installations and involving many thousands of dollars a detailed special contract is negotiated.

The "scope of work" supplement is prepared by the department having jurisdiction over the work to be performed. It includes: (a) location where work is to take place; (b) all information needed to permit bidder to submit a clear and intelligent bid—plans, specifications, etc.

Invitations to bid are drawn up by our department. Each prospective supplier is given a specific date and location for pre-bid conferences with me or my representative from purchasing, and the head (or his representative) of the department involved. Space Corp.'s contracts administrator also attends this meeting to see that subcontract provisions are properly drawn within the framework of the prime contract.

As materiel manager, I (or my representative) open all bids. It is my decision as to who is the successful bidder, based on his qualifications to perform in accordance with our requirements. Before making the award, I confer with appropriate department heads to discuss bidders' qualifications.

In those few cases where it is desirable to negotiate a contract

through an officer of the corporation, a representative of the purchasing department is always present. All agreements and conditions arrived at in the negotiation must be written out and made available immediately to purchasing and are retained in department files.

#### From the Top Down

Each Space contract poses a unique set of problems. Almost no project of ours is of the long-flow production type, so a constant exchange of information between departments is of prime importance.

#### REQUEST FOR QUOTATION — NOT AN ORDER

##### SPACE CORPORATION

P. O. BOX 5178  
DALLAS, TEXAS

IN REPLY  
PLEASE REFER TO  
No. 298

TO Smith Co. PO Box 5178 St. Louis, Mo.	<p>IMPORTANT - PLEASE REPLY USING THIS FORM. INFORMATION BELOW MUST BE FILLED IN. FOR SHIPMENT TO: SPACE CORPORATION (Ship to and outside U.S. ordered items)</p> <p>F.O.B.</p> <p>VIA</p> <p>TERMS:</p> <p>DELIVERY</p> <p>1. WE RESERVE THE RIGHT TO ACCEPT OR REJECT ANY OR ALL PARTS OF THIS QUOTATION.</p> <p>2. ATTACH COMPLETE SPECIFICATIONS FOR ANY SUBSTITUTIONS.</p> <p>3. ANY ORDER ISSUED AS A RESULT OF THIS QUOTATION SHALL BE SUBJECT TO TERMS AND CONDITIONS APPEARING ON THE REVERSE SIDE HEREOF.</p> <p>4. RETURN ALL BLUEPRINTS WITH YOUR QUOTE.</p>
TO Jones Inc. Worth Building Kansas City, Missouri	
TO Brown Bros. 5986 Sierra Drive Los Angeles, Cal.	
TO	

YOUR QUOTATION MUST BE RECEIVED BY 12/1/58 FOR CONSIDERATION IN REPLY PLEASE REFERENCE OUR JOB No. 548

QUANTITY	DESCRIPTION	UNIT PRICE	DISC.	NET PRICE
	<p>All services incidental to the preparation and publication of a non-classified handbook for Job 548 (Contract N000(00)00000) as described in IFB "Publication Contract Requirement Serial No. 405-58 Item 1A and C" and in accordance with Specification XMA 00 - Price to include necessary liaison and guarantee of service acceptance.</p> <p>Drawings attached for necessary planning. Approved revised drawings will be furnished successful bidder at time of award.</p> <p>DELIVERY: Sixty (60) days after award. Award will be made not later than ten (10) days after quotation deadline.</p>			

ACKNOWLEDGED BY

NAME \_\_\_\_\_

BY \_\_\_\_\_

DATE \_\_\_\_\_

SPACE CORPORATION

By J. J. Nelson

Manager of Procurement

DATE 11/17/58

When a contract is awarded to the company, a general meeting is called by President M. G. Hughett to set up an overall plan of work. Heads of procurement, engineering, estimating, scheduling, manufacturing, quality control, sales, finance and field service discuss all foreseeable problems. By anticipating inevitable problems we have been able to save thousands of dollars and, even more important on some projects, a great deal of time. Day to day reviews are made as the work progresses, with formal meetings of department heads held weekly.

# Stockholders View A Purchasing Department



Dennison P.A. Ronald S. MacKenzie and his staff buy 250 grades of paper stocks from 75 mills. Around 50 million pounds are purchased annually.

*Here's how one company shows how much it values the work of its purchasing department. Purchasing is featured in the company's annual report with a review and analysis of the year's operation.*

**By Leonard Sloane**

**L**AST YEAR, about 4500 stockholders of Dennison Manufacturing Company got a birds-eye view of the operations and program of the corporation's purchasing department.

This dramatic presentation of purchasing's contribution to the Framingham, Mass., company came through the Dennison annual report. Six of the report's 22 pages were devoted to what it termed "the vital and dynamic work" of purchasing.

## **Forward-Minded Operation**

The facts presented to Dennison's stockholders tell the story of an alert, forward-minded purchasing operation. They show how the department, under the leadership of Ronald S. MacKenzie, fulfills its role in the company.

The Dennison annual report features the activities of a department in the company every year. This particular article gives the whole story of purchasing and its accomplishments. It's called "How Quality Materials Contribute to Dennison Progress."

Among the purchasing areas covered in the report are organization, methods, relations with suppliers, inventories, and quality control. They add up to a complete picture of the Dennison purchasing job that its stockholders

can be quite proud of. Here are some of its highlights:

Dennison's purchases range near the \$19 million mark, or close to half annual sales. Of the total procurement, 79% is expended on raw materials alone.

## **3000 Vendors**

More than 3000 different vendors cut up the Dennison purchase dollar. The largest part of the pie, however, is sliced by the 75 paper mills from which the company buys. Over 250 paper stocks totalling around 50 million pounds are bought by MacKenzie and his five assistant purchasing agents each year. They issue over 20,000 purchase orders annually.

Each of the assistant P.A.'s concentrates on a particular area of buying. But MacKenzie believes that "each buyer should have a general knowledge even though he has a specialty." This theory is carried out in practice at Dennison, with every man able to fill in for every other in an emergency.

For instance, each assistant P.A. knows the supply sources of the various grades of paper and the end uses of each. During any emergencies, any of them can step into another's shoes and select the vendors who can handle a particular job.

MacKenzie is on the inventory control committee. Others on this committee are the heads of the planning, marketing, research, and production departments. They determine the corporate policy regarding stores, raw material tests, merchandising, and new products.

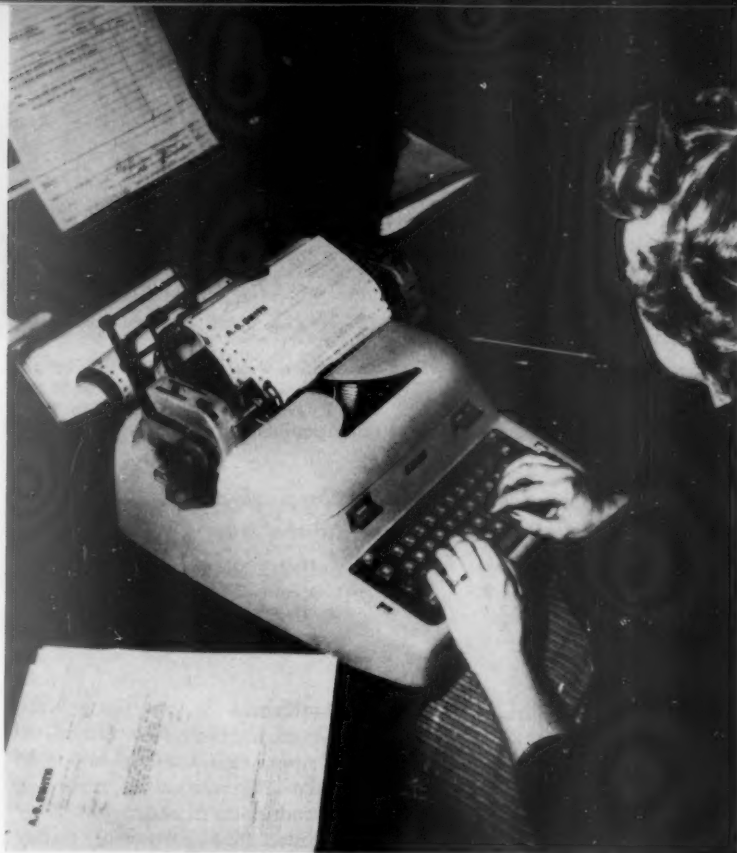
## **Standards For Suppliers**

Dennison has rigid standards for its suppliers to meet. Although MacKenzie believes in multiple supply sources to protect the company in case of floods, fires, or strikes, he makes a thorough evaluation of potential new vendors before placing them on the approved list.

Among the items he investigates are the vendor's locations, his facilities, and his physical layout. Frequent trips to suppliers' plants are a regular part of his schedule. He also makes a study of the management to determine if it is modern, progressive, and technically capable. For example, Dennison recently evaluated 18 vendors in one category and chose four as satisfactory sources.

When a paper mill is put on the approved vendor list, MacKenzie usually gives it a small order first. This is processed and then checked by Dennison to see if its

*(Please turn to page 104)*



Six-part purchase order includes two translucent sheets which are used to make additional copies by the diazotype process.

## New System Ends Typing Bottleneck

*Purchase order copying system cuts paperwork in purchasing and receiving, is especially helpful on emergency requisitions and partial shipments.*

A NEW diazotype copying system has enabled A. O. Smith Corp., Milwaukee, to slash order-processing costs by several thousand dollars per year. James E. Borchert, general purchasing agent for production materials,

reports that the Bruning Copyflex system has produced these benefits:

(1) The bulk of the typing formerly required in receiving has been eliminated. Between eight and nine man hours per day

have been saved.

(2) The typing bottleneck in purchasing's order-service section has been ended. Orders that were seldom mailed until a day after the requisition was received are usually in the mail within a few hours.

(3) Proofreading when purchase orders and receiving reports are typed has been cut to the bone. In order-service this has saved several dozen hours a week.

Here's how the system operates:

On rush requisitions—A. O. Smith calls them "express requisitions"—order typists are bypassed completely. The first step is to copy blank pre-printed purchase order forms on sensitized paper. This is done by making a "sandwich" to feed into the copying machine. The bottom layer is a sheet of sensitized paper. The top layer is a blank purchase order form. The "filling" is an opaque acetate mask, cut to expose the heading at the top of the purchase-order form and the instructions at the bottom of the form.

When this sandwich is run through the copying machine, the heading and instructions are transferred, but the remainder of the sensitized paper is not exposed. Variable information can now be copied onto the unexposed area.

This information comes from the "express" requisition, which is fed into the machine along with the sensitized paper onto which the heading and instructions have been copied. All the order data from the "express" requisition fits into the space previously shielded by the acetate mask. What comes out of the machine is a completed purchase order, which has been prepared without time-consuming typing.

### Handling Regular Requisitions

Regular requisitions are processed by the buyer and go to the order-service sections, where vendor, shipping, and item information are typed on a special 6-part purchase order form. Two of the sheets in this set are translucent so that copies can be made by the



machine.

After being proof-read, the order set is distributed. The original goes to the vendor and two copies are sent to the accounts payable department (accounts payable copy and numerical file copy) and the requisitioning department.

One of the two translucent sheets goes to order-service which reproduces the required number of copies for internal use. It then becomes the "buyer's" copy and is retained for his records. Another translucent sheet goes to receiving. When delivery is made, receiving information is written or typed on this sheet to complete the receiving report.

#### **Help on Partial Shipments**

Three copies of the completed report are reproduced on a Copyflex machine in receiving. One goes to accounts payable, another to the requisitioner. A third stays with the shipment.

Mr. Borchert says this system really pays off when a single order consists of a number of items delivered in a series of shipments. "Even though a separate report is required for each delivery, no rewriting is necessary," he points out.

As each item arrives, receiving notes the quantity delivered and date on the original receiving report copy. Then the three copies required are reproduced on the machine and distributed. When the next part of the same order is delivered, the original receiving copy is brought up to date and another set of copies is run off and distributed. This procedure is followed until the entire order is completed.

When the last shipment has arrived, a cumulative history of receipts and the dates on which they arrived, is recorded in the receiving's copy of the original, and on the final set of copies. Frequently, production or engineering will want additional copies of the order. At other times, especially in the case of cost-plus-fixed-fee contracts, the request comes from the customer. In

either case, it may be necessary to copy up to 15 copies of the original purchase order.

#### **Processing Time Cut**

"Before installation of the copying machine, obtaining these extra copies was quite difficult," according to Mr. Borchert. "If only a small number of copies was required, they were prepared on the typewriter at the same time that the original order set was being prepared. As a rule the order data had to be typed a second time, on a second set of blank sheets, because it wasn't possible to insert all of the original set,

as well as the copies required, into the typewriter. Result: increased order-processing time and labor costs.

The new system has a number of minor advantages, hard to measure in dollars and cents, but important to those outside purchasing. Both receiving and the requisitioning departments have been able to cut down sharply on the amount of filing space needed by filing only the cumulative receiving report form instead of a report for every shipment. Requisitioners are better able to keep track of deliveries, and to anticipate when items still on order will be arriving.



Clear, permanent, black-on-white copies of completed receiving reports are run off on this copying machine after receiving information is filled in on a translucent sheet.

# When Almost Every Order Is "Rush"

*Buying components for critical defense items puts a burden on purchasing. It has to meet high quality standards and tight delivery schedules. Flexible systems and good vendor relations are a must.*

By John F. Sincere

A LARGE SIGN in Resistoflex Corporation's inspection department reads, "There are no repair stations at 80,000 feet." It explains why the company's vital hose assemblies for aircraft and missiles must receive 100% inspection before shipment from the Roseland, N.J. headquarters.

Most customer shipments of these carefully engineered and tested products are "rush." Specification changes occur rapidly in aircraft design, and delivery

must sometimes be made in a day or two from receipt of the order.

High quality demands and tight delivery schedules put every department under pressure—particularly purchasing. To meet these special requirements Purchasing Agent R. J. "Rube" Atkins sticks closely to two basic principles in operating his department:

- (1) Forms and procedures must be fast, simple and flexible;
- (2) Utmost cooperation must be obtained from vendors.

## The Purchasing System

Requisitions originate with production control after it has received a procurement request from the inventory control department. On a few major commodities that are used regularly, requirements are drawn up by purchasing on a historical basis.

The purchase order is written the same day the requisition is received, often within a few hours. Delivery point is indicated, since all buying is done at the main office for two plants and one

warehouse in other locations.

As new items come up, a purchase history card is made up for each (see illustration). Meanwhile seven copies of the purchase order are being distributed. The original and acknowledgment go to the vendor; one to the purchasing file; one to inventory control; one to receiving, and one to the requisitioner.

## Special P.O. Form

Since rapid delivery is so essential to Resistoflex, special provision is made on the seventh copy of the order for a complete record of receipts, returns, and expediting action. This copy is of stiff paper and is sent to one of the two department expeditors for use in follow-up.

Back of the form carries spaces for all basic information on receipts, returns, invoices and follow-up action. Running along the top of the front of the form are numbers 1 to 31—indicating days of the month. A small metal tab carrying a number for the month (1 for January, 2 for February,



Rube Atkins (l.) is no deskbound P.A. His concern for quality and delivery often takes him into the shop.



It's a Resistoflex policy that someone in purchasing see every supplier who calls. Often representatives of engineering or production will be asked to sit in on an interview.

No. 78347

**PURCHASE ORDER**  
**RESISTOFLEX CORPORATION**  
ROSELAND, NEW JERSEY

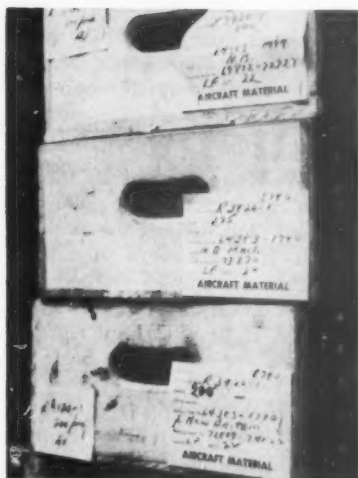
TO: **XYZ Screw Machine Co.**  
125 Amsterdam Avenue  
Passaic, New Jersey

DATE: 7/2/59  
QUANTITY: 12,000 pcs.  
DESCRIPTION: R10101-5, Elbow, as per B/P, Original #1, attached  
Notarized Affidavits certifying chemical and physical  
analysis required with each shipment of parts.

PRICE: \$ 700.00/IN

**MATERIAL CERTIFICATION  
MUST ACCOMPANY SHIPMENTS.**

Follow-up copy of purchase order is made of heavy stock, has on reverse side a complete history of receipts, invoices, returns, and expediting action.



Follow-through is basic in controlling quality. Every critical part bin is marked with basic purchasing and receiving information so that quality failures can be traced immediately.

etc.) is clipped to the number of the day on which expediting will be necessary. A couple of days before the date for expediting the form is removed from the file for the two purposes: so that the order can be noted on a list sent to inventory control showing those orders that will be followed on a given day; and to inspect the order to see if a 'phone call might be made earlier to get

quicker action.

Use of the telephone for speeding delivery on critical parts reflects a Resistoflex policy of cultivating sound personal relationships with its suppliers.

Atkins demands that every effort be made to grant interviews to all suppliers who call. If a buyer is actually too busy to see a caller at a given time he will try to have one of the expeditors talk to him. Or he will at least talk to the visitor by telephone and explain his situation. The three buyer department handles about 24 interviews a day.

#### Lines Open to Suppliers

A salesman's suggestion to Atkins that he tell "the fellow in our plant" what he told the salesman about improving quality and service led to a highly successful program of supplier visits. Atkins visited the salesman's plant and talked to operating personnel, engineers and executives of the company. The talk was so well received that he has made similar appearances at other plants and is planning more. The Resistoflex control staff also visits suppliers regularly. There are few problems of time and distance involved in these visits. Purchasing generally selects suppliers who are located near the Roseland plant so that

delivery schedules can be met easily.

#### Purchasing Costs Low

Despite the fact that much of Resistoflex' annual purchases of \$5 million is spent on custom-made, "rush" items, purchasing costs are unusually low—about 1%.

Atkins has just begun a cost reduction on items not subject to obsolescence. Suppliers will be asked to make up larger quantities than usually ordered and stock them until needed. The program is far from complete, and studies are now being made as to reasonable stocking quantities for each item. No final decisions will be made, of course, without consulting with vendors.

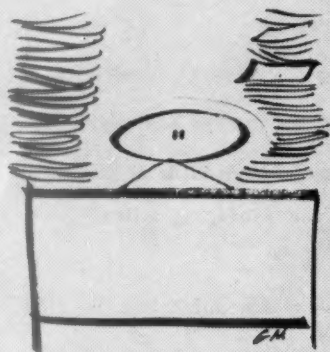
A recent incident illustrates the close and cooperative nature of Resistoflex' supplier relations. A supplier noticed a tolerance difference between mating parts, one of which had been machined several weeks before the other. He checked and found he had followed Resistoflex specifications. He still wasn't satisfied, however, and pointed out the discrepancy to a buyer, who found there had been an error. This kind of supplier vigilance Resistoflex considers a very valuable asset developed from an effective vendor relations program.



# How Effective Are Your Buyers?

*It isn't an easy job to measure purchasing performance. Good buying involves many hard-to-measure factors. Here's an approach that reduces the intangibles to a minimum.*

**By Art Pearson**



**T**HE PERFORMANCE of a buyer depends on the purchasing environment in which he works. And the results of the buyer's work depends on the authority and responsibility management gives him.

Management sometimes expects more from a buyer than it realizes. Many measuring techniques fail to reveal this because they were not developed to evaluate buying in terms of the basic job requirement.

Before evaluation is attempted the purchasing department's responsibility should be defined in writing. Job requirement definitions must not be purchasing's alone but should be subscribed to by top management and the using departments dependent on purchasing's performance. Nor is it enough to define responsibilities in broad, vague terms.

Success in defining the purchasing job pays off. Lateral departments, top management and pur-

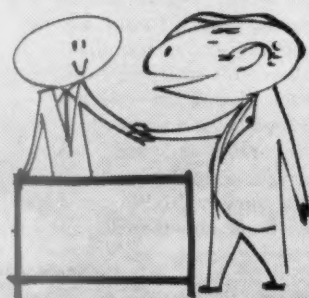
chasing have specific criteria against which to plan.

What are some of the ideas that we can expect in a policy statement that defines the purchasing job. It is far more than the five rights sometimes talked about: right quality, right quantity, right price, right place and right time. These are only very basic ideas. For example:

Reliability must be negotiated into every purchase. Suppliers' confidence must be gained and maintained. An adequate list of qualified vendors is essential. The flow of material must be steady and in economical quantities. Also necessary is a sound, well-integrated organization structure with clearly established responsibilities and authority to carry them out.

## **Good Planning Essential**

Sound policies and simple procedures everyone can understand make for good planning. They should be coordinated with company planning. This helps give purchasing adequate lead time. Cost and price standards, as they affect the over-all cost of any purchased item, must be under-



Mr. Pearson is the author of a number of articles that have appeared in PURCHASING Magazine in recent years. In his "spare" time, he manages to keep busy as a staff assistant at the Naval Division of Northrop Corporation, in El Segundo, California. He is currently chairman of the N.A.P.A. committee on evaluating purchasing performance.



stood to keep the end product competitive. There must be the necessary time and facility for product research, together with value analysis, in order to improve competitive position. Purchasing's ability to extend the capacity of manufacturing through use of vendors' facilities is another important area of purchasing responsibility. Every P.A. can add to these responsibilities various duties that are unique to his company or industry.

#### Area of Evaluation

The buyer who is to be evaluated can only be judged within the framework of the policies laid down for him. Such policies vary of necessity from company to company so comparisons of purchasing departments in even the same industry are not practical. A department may be weakened because a top management official "knows" that a purchasing department in another company operates within a given cost ratio. In fact, purchasing people have been understandably reluctant to generate certain factual information that could be misused at the management level by persons with a lack of purchasing understanding. The time has come though when we must use such information and show management how to use it intelligently.

Management planning and control should have as its objective a mature organization. If you are constantly putting out fires, you are a long way from having a mature organization. In a mature organization, personnel operate effectively to accomplish the end result. In less-than-mature organization, each person's days are filled with harassment and his work suffers accordingly.

The maturity of a purchasing organization can be measured by the following criteria:

- Are the required delivery schedules padded because using departments have come to expect slippage in vendors deliveries?

- On stock inventory items do the using departments draw out excessive amounts because they have never developed confidence that these items will always be

### Evaluating the Purchasing Department . . .



There are three basic elements in buyer performance: personal qualities, intangible factors of professional competence, and tangible factors. Over-all evaluation is improved if each is rated separately.

#### PERSONAL QUALITIES

- (1) How do his appearance, manner, and bearing impress others?
- (2) Is he mentally alert?
- (3) How effective are his voice and speech?
- (4) How well does he express himself orally and in writing?
- (5) Is he emotionally poised?
- (6) Initiative and resourcefulness?
- (7) How well does he meet the physical demands of the job?
- (8) Attitude of others—dept. outside purchasing; vendors?

#### PROFESSIONAL COMPETENCE—INTANGIBLE FACTORS

- (1) How well does he know his commodities?
- (2) How well does he know and use basic purchasing skills?
- (3) Preparation for negotiation?
- (4) Communication?
- (5) Intra company influence?
- (6) Public relations value?
- (7) Long range values?
- (8) Procurement preplanning?
- (9) Seek competent council?
- (10) How does he react to constructive criticism of a professional nature?
- (11) Sales ability?
- (12) What is buyer's understanding of his job?

#### PROFESSIONAL COMPETENCE—TANGIBLE FACTORS

- (1) Value analysis reports
- (2) First buy procurements
- (3) Bid folder analysis—contract form.
- (4) Procurement consolidation programs
- (5) Savings performance
- (6) Price index program
- (7) Vendor rejection rate and/or reliability of product.
- (8) Vendors delivery performance.
- (9) Examples of better thinking
- (10) Average dollar value of orders placed—change from previous report.
- (11) Average monthly order placement for past 6 months.
- (12) Range of order placement by dollar incidence (cost to spend a dollar and place an order)
- (13) Compliance with department policies and procedures.

available when requested?

• Are the engineers, both industrial and design, spending considerable time interviewing vendors rather than depending on purchasing to screen potential sources?

#### **N.A.P.A. Program**

The N.A.P.A. committee on evaluating purchasing performance is trying to develop evaluation techniques in the following areas:

1. Negotiation technique.
2. Extent of purchasing pre-planning.
3. Purchasing techniques.
4. Statistical controls.
5. Forecasting techniques.
6. Personnel training programs.
7. Use of standardization.
8. Value analysis: materials, methods, vendors.
9. Procurement research.
10. Quality control.

11. System engineering—service factors.

12. Programs for inventory coordination and consolidation (economical buy quantities).

This is an ambitious program. The need for it was highlighted at the annual N.A.P.A. convention when almost every speaker on the program directly or indirectly pointed up the need to evaluate our work. Everybody feels the need to evaluate but there is little useful information on the subject.

#### **Statistical Controls**

The only area we have much information about is that of statistical controls. Let us consider some specific evaluation statistics:

What is the average dollar value of your purchase orders?

How many orders and dollars are spent in each dollar category?

What is the dollar value of

items on your shortage lists?

What does it cost to spend a dollar?

What is the average time in hours per buyer per order?

How many requisitions are received with insufficient buy time?

Do you know the rejection rate of your vendors?

Do you maintain information on vendors' compliance with delivery promises?

Do you have a price index program?

These questions are only a sample of the useful evaluation control facts that could be used to determine progress toward a mature operation. The specific level (i.e. numerical value established in answer to the above questions) is not too important. Only the changes and their direction need be studied closely. For example, improvement in the use of purchasing techniques should show

(Please turn to page 104)

## **De Rose Joins Purchasing Magazine Editorial Staff**



**Louis J. De Rose**

**L**OUIS J. DE ROSE has joined the staff of PURCHASING Magazine as Editorial Marketing Consultant.

Mr. De Rose, a prominent training and management consultant, is a leading figure in purchasing education. He has conducted purchasing training courses for N.A.P.A. associations in New York, Buffalo, Syracuse, Albany-Schenectady, Washington, D.C., Carolinas-Virginia, Chicago, Detroit, and Cleveland. He has spoken at numerous purchasing meetings and was featured at the N.A.P.A. national convention in Chicago in 1958. While professor

and chairman of the Department of Management at Fordham University he conducted courses on purchasing for the Aircraft Industries Association.

In addition to his association work, Mr. De Rose has held training courses and consultation in industry in purchasing, materials management, inventory control, production control, sales and marketing. Among his clients are various departments of the General Electric Company, a number of divisions of the Westinghouse Electric Corporation, International Business Machines Corp., Sperry-Rand Corp., The

Martin Company, Curtiss-Wright Corp., and many others.

In his new position, Mr. De Rose will be able to offer PURCHASING Magazine readers and advertisers the benefit of his tremendous experience in purchasing and related fields. As marketing consultant he will meet with marketing executives to discuss and evaluate the coordination of their efforts with modern industrial purchasing practice. He will also meet regularly with PURCHASING Magazine's editors to assist in over-all planning and the development of special editorial projects.

# Purchase Order Analysis Measures Standards Progress

By P. J. Callan

SEVERAL years ago our various divisions launched a cost awareness campaign to minimize the cost of projects within their control.

Purchased materials account for a large share of the over-all cost and hence came in for a rather critical examination. This disclosed that we had apparently not fully exploited the savings in materials and labor costs.

Those directing the campaign were convinced that the materials already standardized were returning savings many times in excess of the expense required to standardize them. But they also felt that the program had not been carried far enough and that the standardization effort should be increased.

A committee was then formed to direct the effort. It consisted of one representative each from the purchasing, engineering, construction, stores, and standards divisions. This committee operated very smoothly and reached unanimous decisions on nearly all phases of this problem, but foundered when it came to one particular and important aspect. This was the general lack of any reliable data or any reliable means to get answers to the following four basic questions:

- (1) What percent of all the materials being purchased had already been standardized?
- (2) What percent of all materials being purchased should be standardized? That is, how far was it economically feasible to go?
- (3) To what extent did we

utilize the materials that were standardized? In other words, how effective was our standardization program in terms of its acceptance by our engineers and others who were in a position to select materials?

- (4) How could we measure any progress that might be made as a result of the campaign and as a result of the additional money that had been authorized to accelerate the standards program?

We found an answer to the first question by a fairly safe estimate which indicated that about 30%, on a dollar basis, was already standard. This served only to focus attention on the second question. What we wanted answered was not what percent of all items were standard, but rather what percent of all *standardizable* items were standard.

Our first step in this direction was made by our purchasing division. A typical buyer group was selected and arrangements made for them to code every item purchased during a 12-month period. A simple code was set up:

**Code "A" was applied to a standard item—an item having been**

previously standardized and recorded in our catalog of standard materials.

**Code "B" was applied to a potentially standardizable item—an item which, in the experience of the buyer, was readily available commercially, and hence would be standardizable if the record showed that it had been purchased with sufficient frequency.** **Code "C" was applied to a non-standardizable item—one which, again in the experience of the buyer, was definitely special or which apparently would not occur often enough to warrant standardization.**

Each item was also classified with a 3-digit classification number which is an integral part of our purchased materials identification numbering system. The basic information was then transferred to punched cards, the cards sorted into the desirable sequence, and the information printed out on a tape.

The sort was made first by the code, then by the classification number, next by the item names arranged alphabetically, and finally by order number, the number of units, and the total number of dollars. A summary by code numbers gave us the over-all statistical data we were looking for, while a more detailed analysis by classification number or by item name or by both gave us the information needed to make subsequent improvements.

The data can be analyzed in terms of four criteria; i.e., by the number of orders, the number of items, the number of units, or the number of dollars. For some purposes, say in considering the work load in the purchasing division, the best criterion might be the number of orders placed. For



Our value analysts have come up with a cost-saving idea we're passing on to customers.

*Abstract of a talk given at the Ninth National Conference on Standards conducted by the American Standards Association. Mr. Callan is Director of Material Standards for Eastman Kodak Co., Rochester, N.Y.*

(Please turn to page 102)

# Can Vendors Limit Implied Warranties?

*The Uniform Sales Act and state laws define implied warranties inherent in sales contracts. But in certain situations, suppliers can specifically exclude these warranties—by stating so point-blank in the contract. These court decisions provide some guidance for P.A.'s in the area of vendor liability for implied warranties.*

By Albert Woodruff Gray

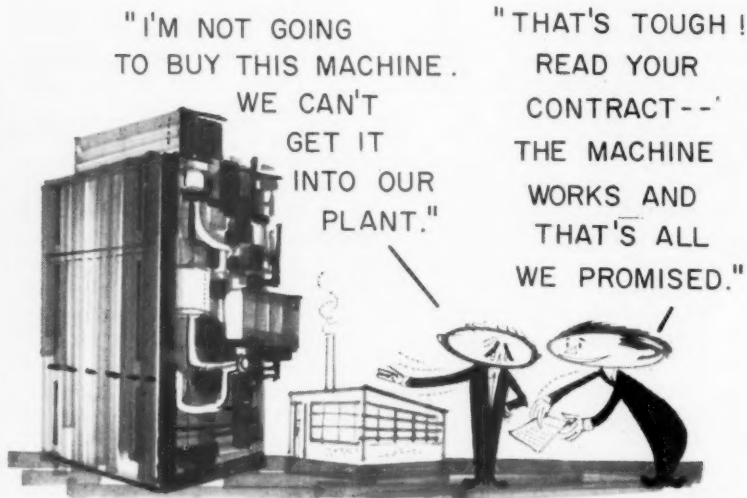
IN A contract for the purchase from a Kentucky manufacturer of a machine for the production of concrete building blocks, there was included a limitation on warranties, both express and implied by law. The contract suggested the comment, "Thrice is he armed that hath his quarrel just and four times he who gets his fist in fust."

Embodied in that purchase contract was this clause: "There are no understandings, agreements, representations or warranties, express or implied, not specified herein respecting this order. The warranties, provisions, terms and conditions on the reverse side hereof are expressly made a part of this agreement."

On the back of this order—that had been accepted by both P.A. and vendor—were clauses limiting liability to defects in material and workmanship. Even these were limited to making good for the defects taking place at the factory.

## Represented as Fit

Nearly a year later the purchasers of this machine asked a Kentucky court for a recovery from the manufacturer of \$5,624.57 they had paid for this machine. The reason: it had been represented as fit for the manufacture of concrete building blocks and was



One court ruling covering this sort of problem is this: "anyone brought up to believe that for every wrong there is a remedy will pause before saying that the seller will escape all liability by merely putting in the order blank a statement to the effect that the buyer will get a machine that will work. We have paused for a moment and have readily concluded that the evidence of liability under such circumstances is not by the law. Otherwise one would have no recourse where he got an automobile without motor or wheels."

worthless for that or any other purpose.

There is a statute in Kentucky stating that there is no implied warranty or condition as to quality or fitness for any particular purpose of goods supplied under a contract of sale or a sale. The exception is if the purpose of the sale is made known to the seller and the buyer relies on the sell-

er's skill and judgment, there is an implied warranty that the goods are fit for the purpose. It is provided further that any right or liability in the sale "may be negated or varied by express agreement."

From a court decision granting the buyer a recovery of the money paid for this machine, the manufacturer appealed. In supporting



the lower court, the Kentucky Court of Appeals spoke out strongly against attempts to implement contract clauses that waived either express or implied warranties. It also affirmed the obligations of decent business practices.

#### **Waiver Is Void**

"Anyone brought up to believe that for every wrong there is a remedy will pause before saying that the seller will escape all liability by merely putting in the order blank a statement to the effect that the buyer will get a machine that will work. We have paused for a moment and have readily concluded that the evidence of liability under such circumstances is not by the law. Otherwise one would have no recourse where he got an automobile without a motor or wheels.

"Where there is a complete failure of a machine to accomplish the purpose for which it was designed, that is to manufacture a merchantable product, it is much more than the breach of an implied warranty of suitability or fitness for a particular purpose. It is not a merchantable article if it will not do what it was intended to do. There has been no delivery of that which was bought."

To this statement was added the comment, "To sell a man a machine for manufacturing a merchantable product that will not accomplish that purpose at all, is a breach of the contract itself, rather than a mere breach of warranty. If the machine is worthless for the purpose for which it was sold, there is a failure of consideration."

However, unless such waivers are clearly utilized fraudulently, as here, and there occurs, a failure on the part of the seller to perform, such clauses will be sustained by the courts.

It has been enacted in North Dakota that any purchaser of farm machinery has a reasonable time for inspection and rejection. The statute states that "Any provision in any written order or contract of sale or other contract which is contrary to any of the provisions of this section, is hereby declared to be against public

"THIS GAME  
IS CROOKED!"

SO WHAT?  
YOU AGREED TO PLAY  
THE GAME MY WAY!"



In one ruling covering a case where a buyer sought to recover the purchase price of some machinery because he felt the machine was not fit for the purposes it had been ordered for, the court ruled: "Both buyer and seller had the right to contract as they saw fit . . . and having done so, neither can, because subsequently he thinks the terms of his contract are unduly harsh, ask relief on that ground alone."

policy and void."

In a suit in that state by a manufacturer to recover the contract price of farm machinery, this same defense was set up—that the machine was not fit for the purpose it had been bought and that any waiver of warranty was void under this statute.

#### **A Valid Waiver**

"Neither do we think that there is any merit to the contention that the contract as contained in the order is void and unenforceable because unfair, unreasonable, and contrary to public policy," said the court—thereby refusing its support to the claim of the buyer that under this statute the waiver was void.

"There is nothing inherently vicious about the terms set forth in the contract. The manufacturer was selling a threshing machine. The farmer was buying one. Certainly a proper and legitimate business transaction. The parties were dealing at arm's length.

"Both had the right to contract as they saw fit with reference to such subject matter, and having done so, neither can, because subsequently he thinks the terms of his contract are unduly harsh, ask relief on that ground alone.

Neither can we believe that there is anything in the provisions complained of inherently tending to be injurious to the public or subversive of the public good or contrary to good morals. We hold then, that the contract as thus entered into must control except as the same is contrary to the declared policy of the law."

#### **Exemption of Liability**

In similar instance before the Wisconsin courts, a contract had been made for the purchase of a thousand bushels of a particular kind of peas. The peas proved to be a mixture of several varieties, ripening at different and unpredictable dates.

In the agreement was the stipulation that the seller "does not give and its agents and employees are forbidden to give any warranty, express or implied, as to description, quality, productiveness, or any other matter and that it is not and will not be in any way responsible for the crops." In sustaining a judgment against the purchaser for the agreed price and in refusing to disregard the waiver of warranty in this order and agreement, this is what the court said:

"The clause quoted was intend-

ed to exempt the seller from such liability as was sought to be enforced against it. If a dealer in seed peas can exempt itself from liability for selling bad, wormy, or dead peas to a grower, no good reason is apparent why it cannot go further and say that it will not be responsible in the event of an intermixture of other peas with the variety agreed to be furnished.

"Neither of the parties are under guardianship or incompetent to contract. There is no claim that the contract signed was not the one agreed upon or that both parties did not fully understand what they were agreeing to. Seller plainly undertook to relieve itself from liability in case of intermixture and the buyer agreed that it should be relieved.

"It is not claimed that the contract is void because contrary to public law or public policy and, if not, effect should be given to it. The buyer might reject and refuse to receive the peas if they were not as agreed, or it might well be that in the event of the shipment being made in bad faith and with the purpose and intention of committing fraud upon the purchaser an action for damages for the fraud would lie. If it be conceded that the contract is one-sided, it must also be conceded that the parties had a right to make a one-sided contract if they saw fit."

#### **Uniform Sales Act**

Statutes substantially identical with the Uniform Sales Act have been adopted by 35 of the states, the District of Columbia, and the Panama Canal Zone. In addition, the statute has been generally followed by the courts of the other states. It provides that, "Where the buyer expressly or by implication makes known to the seller the particular purpose for which the goods are required and it appears that the buyer relies on the seller's skill or judgment (whether he be a grower or manufacturer or not) there is an implied warranty that the goods shall be reasonably fit for such purpose.

"Where the goods are bought by description from a seller who deals in goods of that character (whether he be a grower or man-

ufacturer or not) there is an implied warranty that the goods shall be of merchantable quality."

Interpretation by the courts of the effect of provisions in sales contracts relieving the vendor of express and implied warranties highlights a danger that frequently occurs. Too often such clauses fail to be sufficiently comprehensive to waive completely the obligations imposed by these sales statutes.

In a contract for the purchase of a tractor and hydraulic hoist there was a certain clause that stated:

"No warranties have been made in reference to said motor vehicle by the seller to the buyer unless expressly written herein at the date of purchase." When suit was brought by the purchaser for the breach of an implied warranty that the machine was fit for the purpose it was intended, the seller set up as a defense this provision of the contract, claiming it was thus exempt from that implied warranty.

The decision in this instance was rendered by the Supreme Court of Minnesota against the seller, based on the purchaser's contention that there had been a breach of the warranty in spite of this clause.

#### **Purpose of the Contract**

"An implied warranty is not one of the contractual elements of an agreement. It is not one of the essential elements to be stated in the contract nor does its application or effective existence rest or depend upon the affirmative intention of the parties. It is a child of the law. It, because of the acts of the parties, is imposed by the law. It arises independently and outside the contract.

"The law annexes it to the contract. It writes it by implication into the contract which the parties have made. Its origin and use are to promote high standards in business and to discourage sharp dealings. It rests upon the principle that honesty is the best policy and it contemplates business transactions in which both parties may profit.

"The contention of the seller does not commend itself to us as consistent with the honesty of

purpose with which they are entitled to be credited in their dealings with their customers. The doctrine of implied warranty should be extended rather than restricted."

To this, the court added the further comment, "We must conclude that the parties did not intend to exclude the implied warranty which could easily have been done in unmistakable terms had they so chosen."

#### **Breach of Warranty**

Several years later, this defense of breach of warranty was used again in a suit in Delaware for the contract price of a rotary kiln. Here the disclaimer of liability under any warranties was "The company will repair f.o.b. its works where made or furnished without charge f.o.b. its works, a similar part to replace any material of its own manufacture which within one year after shipment is proved to have been defective when shipped. No other warranty, express or implied, concerning the subject matter of this contract shall be binding upon the company without its written consent duly executed by one of its executive officers."

It was insisted here that under the decision of the Minnesota case, the clause in this contract was insufficient to prevent a recovery of damages for a breach of warranty. Holding, however, that any implied warranties were waived by this clause, the Delaware court quoted another section from the opinion rendered by the Minnesota court:

"It has always been competent for the parties to put their entire agreement in writing and to expressly stipulate that no obligation arising out of an oral contact, imposition of law, or otherwise shall rest upon either, save as defined by their written agreement. If the parties wish to avoid the implied warranty they must in form or substance contract against it."

To this quotation the Delaware court added, "This restriction on the seller's liability, agreed to by the purchaser, limits his right of action to the terms of the writing and specifically excludes every warranty or implication."

TEAR OUT AND PUNCH AS INDICATED FOR YOUR FILE

TEAR OUT AND PUNCH AS INDICATED FOR YOUR FILE

TEAR OUT AND PUNCH AS INDICATED FOR YOUR FILE

BEARING



BRIEFINGS

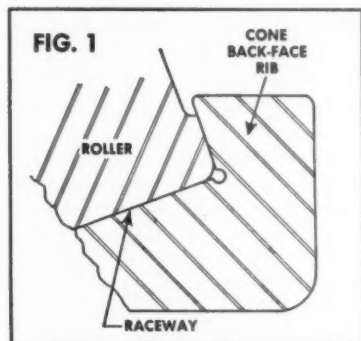
One in a series of technical reports by Bower

## BEARING GEOMETRY MAKES OR BREAKS BEARING PERFORMANCE

To develop high capacity and optimum performance in a tapered roller bearing, it is essential that roller alignment be accurate. Correct roller alignment, in turn, depends on a critical geometric relationship between the cone back-face rib, and the cone raceway.

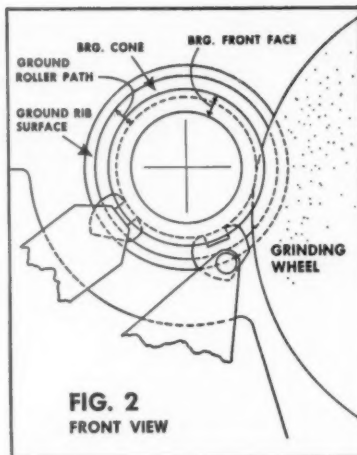
Perfection in this geometric relationship compels the rollers to align themselves perfectly with respect to the bearing geometry, and each roller shares equally in the work that is imposed. Figure 1 diagrams the important elements involved.

When this rib-to-raceway relationship is incorrect (because of either faulty bearing design or manufacturing inaccuracies), rollers experience misalignment and begin to skid and skew under



load. As engineers know, poor performance and premature bearing failure are inevitable under these conditions.

In the design and manufacture of Bower tapered roller bearings, Bower engineers take great care to generate and hold an exact face angle on the cone back-face rib. In practice, this means that Bower

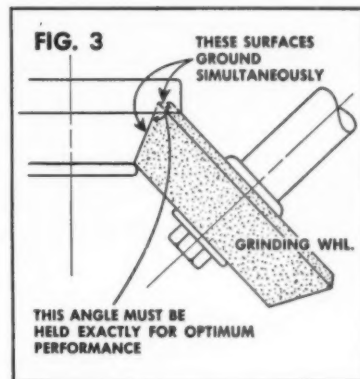


bearings are designed for maximum life and optimum performance under any operating conditions. It means that Bower bearings retain accurate roller alignment under all speeds and loads up to the maximum for which the bearing is rated.

It's one thing to develop proper bearing design on paper, but quite another to carry it out consistently in manufacture. To this end, Bower engineers were instrumental in the design and development of a unique centerless grinder on which Bower precision grinds each bearing's cone raceway and rib-face simultaneously. The results obtained from these machines invariably meet or surpass

Bower's exacting requirements and assure perfect roller alignment.

Figures 2 and 3 are front and top views which illustrate Bower's technique of centerless grinding rib-faces and cone raceways together. As a result, every component in a Bower bearing is perfectly concentric about its rolling axis.



★ ★ ★ ★

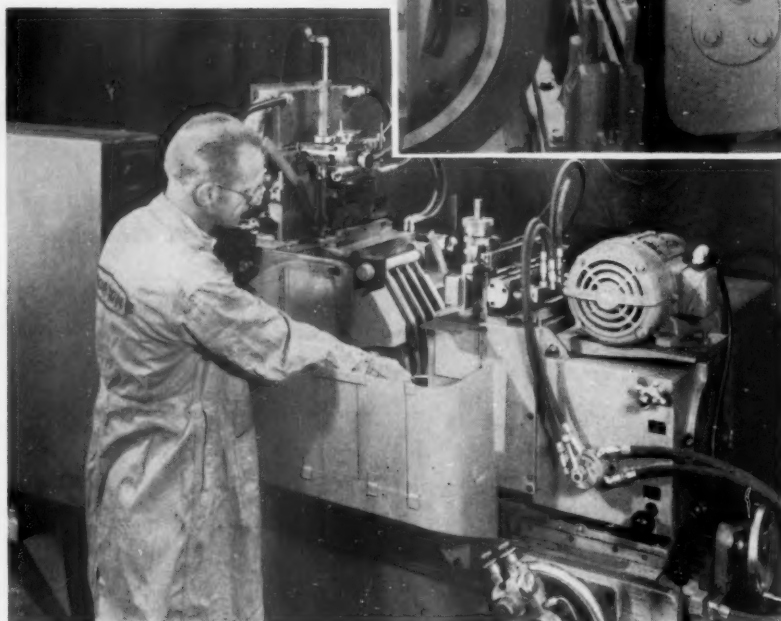
*When you require bearings, we suggest you consider the advantages of Bower bearings. Where product design calls for tapered or cylindrical roller bearings or journal roller assemblies, Bower can provide them in a full range of types and sizes. Bower engineers are always available, should you desire assistance or advice on bearing applications.*

# BOWER ROLLER BEARINGS

BOWER ROLLER BEARING DIVISION — FEDERAL-MOGUL-BOWER BEARINGS, INC., DETROIT 14, MICHIGAN



### New Centerless Grinder Unveiled By Norton



Operator is shown feeding the new centerless grinding machine recently introduced by Norton Company, Worcester, Mass. The insert shows a closeup view of the wheel head-mounted truing device on the grinder.

**A** NEW centerless grinding machine was recently introduced by Norton Company, Worcester, Mass. One of the outstanding features of this new machine is the introduction of Straddle Bearings on the grinding and regulating wheel spindles.

The anti-friction bearings provide support on both sides of the wheel to prevent the deflection normally encountered when an extra wide wheel is mounted on the end of an unsupported spindle. This extra support counteracts the tendency for the spindle to deflect under heavy grinding pressure.

This new development gives greater and more consistent size and straightness control of the work pieces, producing a better rounded and smoother product.

The new centerless grinder permits using companies to run work pieces through in any of the three

basic centerless grinding methods or in combination. These methods are: thru-feed, infeed, and end feed.

Thru-feed grinding is used for straight work and is the most productive of the three. The infeed method is used where multiple diameters or forms are to be ground and for very heavy cuts. The end feed method is like thru-feed except that a stop limits the axial motion.

A grinding wheel slide with rotating feed screw gives precise wheel feed or fine adjustment for sizing on thru-feed grinding. Wheel feeding or adjustment is made by a handwheel with a click-count wheel feed index graduated to fifty millionths of an inch, or by a long lever at the end of the machine.

Work loading alignment is easy with the new machine, particularly in cases where two or more

machines are fixed together by conveyors in a single production line. Since the grinding wheel is fed to the work, the work feed line of both the machine and the work conveying equipment remains fixed. As the wheel wears, the wheel slide is moved closer to the work rest. The work rest remains in one spot.

Grinding wheel truing is manually controlled and hydraulically powered. The operator feeds the truing diamond manually and then turns a lever which actuates the hydraulic truing stroke.

Regulating wheel speeds for grinding and truing are independent. Pull the knob out and the truing speed is immediately obtained. Push it back and the pre-selected grinding speed is immediately produced. The regulating wheel grinding speeds are adjustable from 8 r.p.m. through 66 r.p.m.

For More Information Write No. 194  
on Inquiry Card—Page 32→

**PURCHASING**





**THE ONES THAT WILL LAST (and last, and last!)?  
THOSE MADE FROM CONTINUOUS PROCESS  
ZINC-COATED STEEL SHEETS**

***And just why will they last and last?***

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In continuous process zinc-coated steel, there is a stand-out—Weirkote. On your production lines and in your products, Weirkote will work for you all of the time. For detailed information on the many advantages of Weirkote zinc-coated steel, write today for a brochure. Weirton Steel Company, Dept. G-19, Weirton, West Virginia.



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COMPANY**

WEIRTON, WEST VIRGINIA

a division of

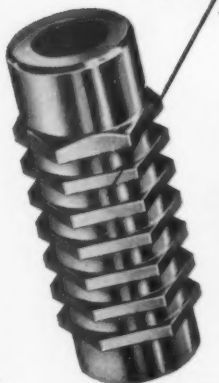
**NATIONAL STEEL CORPORATION**

*two typical cases where* **MUELLER BRASS**  
*determined the best and most*

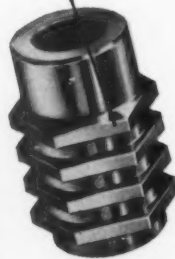
CASE HISTORY 1750

**SCREW MACHINE PRODUCTS**  
**for outboard motors**

Mueller Brass Co. Methods Analysis Engineers, after careful consideration of every aspect of the job requirements, found that the best method of producing these 2 outboard motor parts at the lowest cost was as screw machine products made from hollow hex rod. The insert drive hub and insert bushing are used in the lower units of one of America's most powerful outboards and must absorb constant punishment without failing. Mueller Brass Co. has one of the world's largest automatic screw machine departments fabricating both ferrous and non-ferrous custom parts. Parts can be produced in an infinite variety of shapes and sizes from  $\frac{1}{8}$ " to  $3\frac{1}{4}$ " in a wide range of free cutting and specialized alloys. Complete facilities are available for all secondary and finishing operations, as well.



INSERT DRIVE HUB



INSERT BUSHING

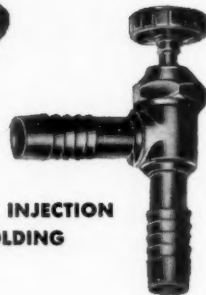


**THE MAN FROM  
MUELLER BRASS CO.**

can give you sound, unbiased advice on the one best method of making your parts because Mueller Brass Co. is the only fabricator in the country offering all these methods of production. An experienced "Methods Analysis Department" has at its command a complete knowledge of the advantages and limitations of each production process. This unique technical service is your assurance of getting the best product at the best price . . . made the one best way.



**FORGINGS**



**PLASTIC INJECTION  
MOLDING**

**MUELLER BRASS CO.**

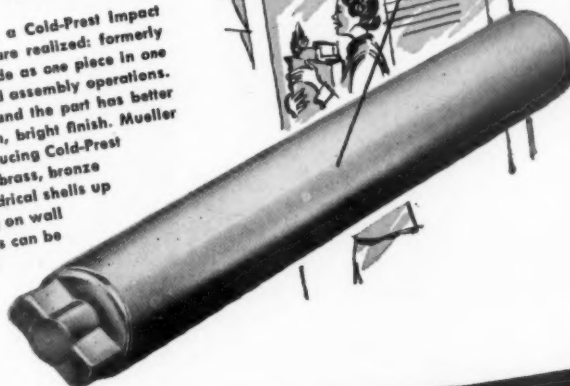
# CO. METHODS • ANALYSIS • SERVICE

## *economical method of producing parts*

CASE HISTORY 226

### COLD-PREST® IMPACT EXTRUSION for door closer cylinder

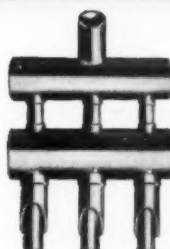
By producing this door closer cylinder as a Cold-Prest Impact Extrusion, several important advantages are realized: formerly made in three pieces, the part is now made as one piece in one operation which eliminates machining and assembly operations. The possibility of leakage is eliminated and the part has better physical properties, as well as a smooth, bright finish. Mueller Brass Co. has complete facilities for producing Cold-Prest impact extrusions of aluminum, copper, brass, bronze and steel. Square, rectangular and cylindrical shells up to 28" in length are possible depending on wall thickness and other design details. Parts can be designed having ribs, flutes, splines or bosses . . . with multiple wall diameters and with various wall sections.



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PORT HURON 30, MICHIGAN

AUGUST 3, 1959

For More Information Write No. 195 on Inquiry Card—Page 32

270

79

FOR  $\frac{1}{8}$  TO  $1\frac{1}{2}$  INCH BRANCH CONNECTIONS



MARK



CUT



WELD

## NEW W-S TeeLet SLASHES TEE COSTS 50% OR MORE!

The new W-S TeeLet replaces conventional Tees of cast or malleable iron, welded or forged steel . . . requires fewer stock sizes. Available in sizes from  $\frac{1}{8}$  to  $1\frac{1}{2}$ " IPS, TeeLets are fully machined from forging quality solid steel bars and adapt to run-pipe sizes to 36". They require no additional joint strength calculations for any ASTM A-53 or A-106 Grade B run-pipe of Schedule 40 or 80.

*What about cost?* A size-by-size comparison with conventional Tees shows TeeLets average less than 50 per cent of the cost you now pay. A W-S TeeLet, with screwed, socket-weld or butt-weld ends, requires no shaping, fitting, beveling or extra alignment. You can connect to the run-pipe at any point. Short heights mean easy inspection of the attachment weld or back-weld, if desired.

A W-S TeeLet costs less to buy, less to install than anything you can buy or make. For complete information, prices, and names of distributors, write: *Forge and Fittings Division, H. K. Porter Company, Inc., Box 95, Roselle, N. J.*



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For More Information Write No. 196 on Inquiry Card—Page 32

## Products

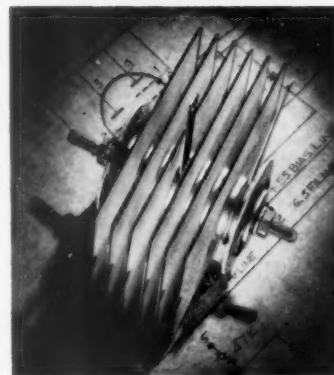
### New Extra Heavy-Duty Grinders



Extra heavy-duty grinders in a new line are available in  $\frac{1}{2}$ ,  $\frac{3}{4}$  and 1 H.P. Cast iron tool rests are adjustable for height, angle and distance from wheel. Extended frame construction permits grinding large, odd-shaped parts. Grinders have full ball bearing construction, lubrication for life, and capacitor start and induction-type motor. Three fine and three coarse grinding wheels are included in standard equipment. Also available from **Stanley Electric Tools** is heavy gauge welded steel pedestal.

Write No. 18 on Inquiry Card—Page 32

### Improved Large Plate Selenium Rectifier Stacks



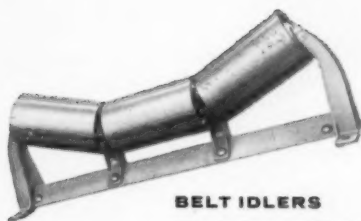
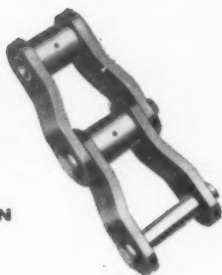
General Electric's improved line of large plate selenium rectifier stacks is capable of withstanding surge currents 150% greater than previous models. New cup-washer design of the stacks has

Please turn to page 82





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**BUCKETS**



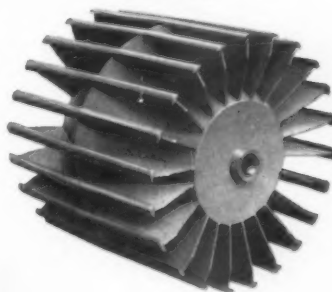
**SPROCKETS**



**PULLEYS**



**PILLOW BLOCKS**



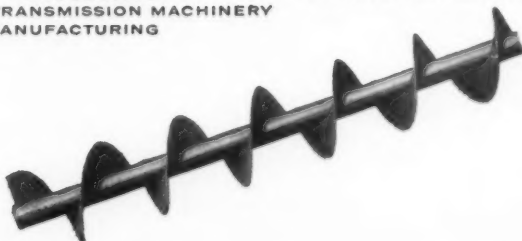
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 MALLEABLE ROUND WASHERS ☐ EXPANSION PLUGS ☐  
 SPRING LOCK WASHERS ☐ HI-TENSILE STRUCTURAL WASHERS ☐  
 SQUARE WASHERS ☐ CASTER SHIMS ☐ AN 960 FLAT WASHERS ☐  
 MACHINERY BUSHINGS ☐

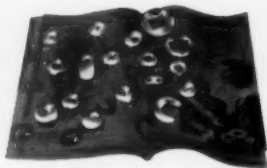


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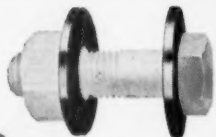
Joliet Wrought Washer Company offers the reserve capacity and flexibility needed to meet both your regular and emergency requirements for washers of all types — standard and special. Capacities range from 1/4" to 8" O.D. with thicknesses from .008" to 1/2". In all metals, all finishes, including heat-treating.

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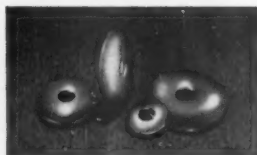


We maintain our own tool and die shop assuring you the utmost in prompt service on new tooling. Your orders are never too large for adequate service, nor too small for personal attention.

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For More Information Write No. 198 on Inquiry Card—Page 32

## Products

(Continued from page 80)

improved the electrical contact area to each cell as well as reduced the possibility of high current concentration on the cells. More uniform cell temperature permits full use of cell's voltage rating for up to 70,000 hours, or nine years, of continuous operation. Immediately available in production quantities.

Write No. 19 on Inquiry Card—Page 32

### Many Key Changes with Super Security Padlock



A new super security, 5-pin-tumbler padlock provides an almost unlimited number of key changes for master-keying purposes. Other features of the Master Lock Company's No. 81 include: 5-pin-tumbler extruded brass cylinder, 1 3/4 in. laminated steel case, alloy hardened steel shackle, heavy brass locking lever, cadmium rustproofing, and tamper-proof construction. Particularly designed for such extensive padlock installation as refineries, utilities, steel and aircraft companies.

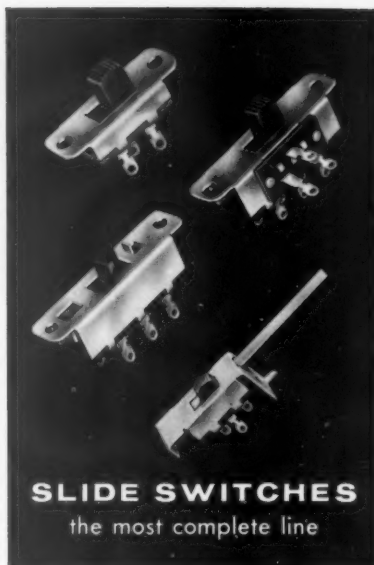
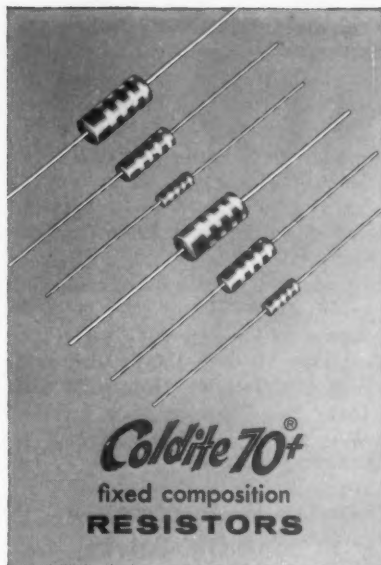
Write No. 20 on Inquiry Card—Page 32

### Plastic Retainers for Needle Thrust Bearings



Plastic retainers for Torrington needle thrust bearings cut tooling costs for new sizes and permit distinct savings in the case of special sizes used for short runs or low volume. New retainers, which are offered in ad-

Please turn to page 84



# STACKPOLE

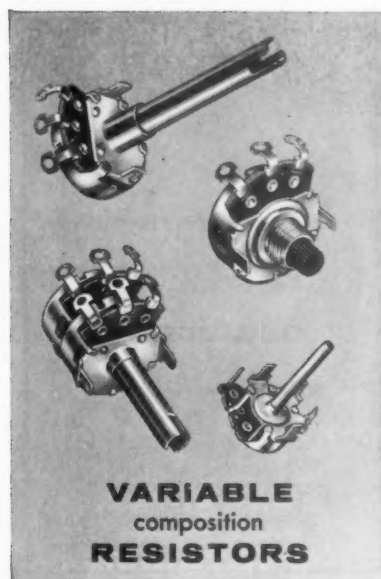
a dependable source of supply  
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**Electronic Components Division**

**STACKPOLE CARBON COMPANY, St. Marys, Pa.**



## Products

(Continued from page 82)

dition to present steel retainers, come only in non-standard sizes and are made to specifications. Plastic is practical for bearings up to a 3 in. bore, and life and load capacity ratings are the same for bearings with either type of retainer.

Write No. 21 on Inquiry Card—Page 32

### New Lapping Process for Carbide Inserts



A new lapping process assures a perfectly flat, smooth finish on carbide inserts. Result is highly polished surface, so fine that two inserts easily wring together, a condition only the most accurately processed surfaces can achieve. This development is said to give Besly Toss-away Carbide Inserts greater cutting tool life per cutting edge with less chipping and breakage. Manufacturer is Besly-Welles Corp., South Beloit, Illinois.

Write No. 22 on Inquiry Card—Page 32

### Belt Conveyors Feature Stress-Point Strength



The new Titan low-cost belt conveyors feature oversize shafts, crown-face pulleys and sealed-

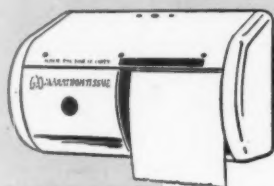
for-life ball bearings, designed to strengthen frequent-breakdown spots. For continuous, general industry use, the basic unit is horizontal-to-15 degree-incline model in lengths from 7-1/2 to 50-1/2 ft. Incline units in lengths from 17-1/2 to 36-1/2 ft. are adjustable from 15 to 35 degrees for between-floors or high-stacking operations. Five styles are offered with either 1/2 or 3/4 h.p. gear motor and worm gear speed reduction, all with 150-lb. unit load capacity. **Samuel Olson Mfg. Co., Inc.**

Write No. 23 on Inquiry Card—Page 32

### No Leak, No Clog Shut-Off Valves

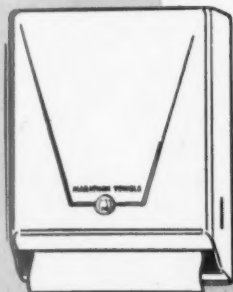
A new series of screw stem shut-off valves is designed to prevent leakage to atmosphere and clogging of activating threads by viscous fluids. Available in standards models for use with fuel oil, gasoline, kerosene, air, water, acids, alcohols and coolants up to 500 psi at -40 degrees F to +250

Please turn to page 88



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Cleaner, neater, more cheerful wash-rooms are yours with half the maintenance with strong, super-absorbent towels and tissue by Marathon. Both have attractive, efficient metal dispensers designed to discourage waste and pilferage. Ask your Marathon paper merchant for full details.



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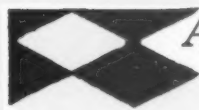
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# Now available on all Parker-Hannifin STRAIGHT THREADS FOR LEAK-PROOF

Industry's new standard as published in J. I. C. Recommendations  
(April, 1959) and S. A. E. Standards (1959 Handbook)

*Why accept less?*

Parker-Hannifin now offers a new standard at no extra charge—high-pressure hydraulic components with straight thread port connections\* for O-ring type fittings. This new standard—assuring a leak-proof and drip-free seal—is the most logical engineering approach to the problem of hydraulic circuit connections. The Joint Industry Conference Recommendations now state:

**"Fittings that incorporate separate synthetic or metal-to-metal seals, or seals that seal with pressure should be equipped with Unified National Fine (UNF) straight thread port connections."**

And the Society of Automotive Engineers' 1959 Handbook states:

**"The S.A.E. straight thread 'O'-ring boss is the preferred port for use in hydraulic devices."**

Both support this new standard—and the U. S. Navy Bureau of Ships in MS16142 (SHIPS) has adopted the S.A.E. Straight Thread Boss Design as their straight thread standard for use in hydraulic and air systems in Naval ships. Such extensive support is understandable. The Parker-Hannifin straight thread port connections combine a built-in pressure sealing device with a rigid mechanical connection. This contrasts with the loose connection of a "backed-off" pipe thread and a relatively weak auxiliary sealing device.

Straight thread fittings and port connections are not a proprietary product or

design. Although developed by Parker-Hannifin, they were immediately made available to the fluid power industry on a completely open basis.

They have been thoroughly field tested. In the severe service on mobile hydraulic equipment, today more than 6 out of 10 of the port connections are of the straight-thread type.

Now machinery builders and users alike are turning to this proved method of port sealing. Pipe threads for high-pressure hydraulic applications are fast becoming obsolete as more and more leading manufacturers recognize these advantages of straight threads in their production equipment:

**No more wedging action with resulting distortion and breakage due to over-tightening...**

**No more messy pipe dope and the danger that it will infiltrate the hydraulic system...**

**No more leaks because of temperature changes or high shock conditions...**

**No more failures of costly auxiliary seals due to weak, imperfect threads that fit on thread run-out.**

**Why accept less?** Next time you order high-pressure hydraulic components, specify Parker-Hannifin with straight thread port connections and fittings... you'll get leak-proof sealing—industry's recommended standard.

\* Mobile equipment spool type control valves are all supplied with straight threads. Other components are still available with dry-seal pipe threads.

**HANNIFIN COMPANY**  
545 S. Wolf Road, Des Plaines, Illinois

**Parker SEAL COMPANY**  
10567 Jefferson Blvd., Culver City, California

**Parker FITTINGS AND HOSE DIVISION**  
17325 Euclid Avenue, Cleveland 12, Ohio

**Parker HYDRAULICS DIVISION**  
17325 Euclid Avenue, Cleveland 12, Ohio

4 DIVISIONS OF PARKER-HANNIFIN CORPORATION

## high-pressure hydraulic components

### PORT CONNECTIONS...



Specify straight thread O-ring bosses on your Hannifin high-pressure hydraulic cylinders for leak-proof connections at no extra charge. These port connections, together with Hannifin's drip-free rod seals, provide the answer to all your cylinder sealing problems.



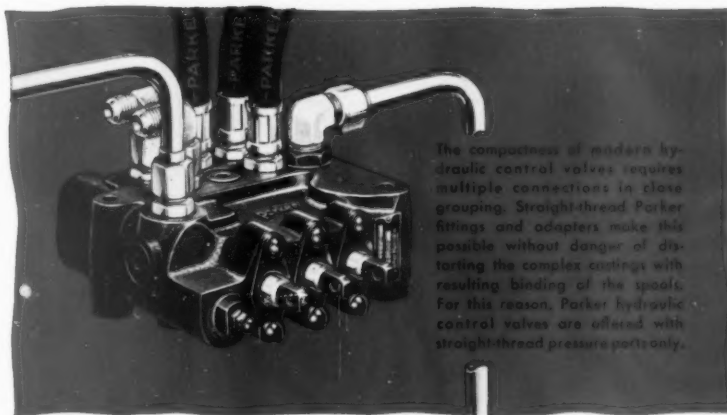
The O-rings used in Parker port connections are made only from service-tested Parker Seal Company compounds. With an ever-increasing number of fire-resistant fluids now on the market, it pays to avoid "jack-of-all-fluids" seals and stay with the Parker Seal compound specifically made for the fluid you will be using.



There's a complete line of Parker straight thread O-ring fittings and adapters for you to choose from... Triple-lok (flare-type) and Ferulok® (flareless, bite-type). Either method assures you leak-proof, trouble-free hydraulic connections.



Now Parker's new "Krimp-lok" permanent-end hose assemblies and "Hose-lok" reusable fittings (as well as all adapters) are available with straight threads. O-ring sealed for any specified fluid.



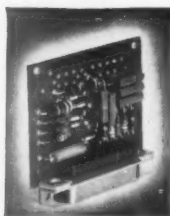
The compactness of modern hydraulic control valves requires multiple connections in close grouping. Straight-thread Parker fittings and adapters make this possible without danger of distorting the complex castings with resulting binding of the spools. For this reason, Parker hydraulic control valves are offered with straight-thread pressure ports only.

*A topper in any language*



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it's lighter and more economical than G-10,  
it's Taylor XY-1 Paper-Base Epoxy Laminate**

When you want extremely high reliability in printed circuits, with the additional advantages of flame retardance, chemical resistance, good solderability and high bond strength—specify Taylor XY-1 copper-clad laminate. It is self-extinguishing in 1 second, has excellent resistance to alkalis, acids and solvents, has a solder time resistance at 500°F. of 30 seconds in 1-oz. copper and 50 seconds in 2-oz., and a bond strength of 10 lb. in 1-oz. copper and 13 lb. in 2-oz. Sheets available with copper on one or both sides.



Unclad Taylor XY-1 has many advantages, too. It can be substituted for glass-base epoxy laminates to reduce cost and weight. It has excellent electrical, mechanical and machining properties. Contact us for complete technical data and expert guidance in applying this new material. TAYLOR FIBRE CO., Norristown 36, Pa.

# Taylor

LAMINATED PLASTICS VULCANIZED FIBRE

For More Information Write No. 204 on Inquiry Card—Page 32

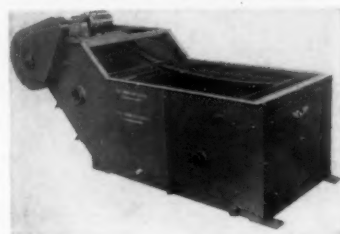
## Products

(Continued from page 84)

degrees F. In  $\frac{1}{8}$  in. and  $\frac{1}{4}$  in. IPT sizes, with large wheel handle standard. Specially designed units for pressures up to 3000 psi also available. New 30V-50V Series is manufactured by Anderson Brass Co., 102 S. Campbell Ave., Detroit, Mich.

Write No. 24 on Inquiry Card—Page 32

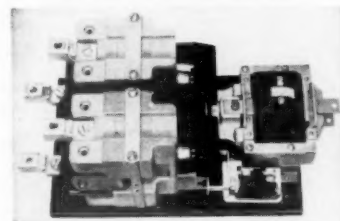
### Compact Separator Removes Ferrous Solids



The Hoffman Magnaflo Separator is a compact unit for the removal of ferrous solids from cutting oils and other soluble coolants. Fully automatic, separator operates without attention and is virtually free of maintenance expense. Self-cleaning unit eliminates need for sump cleaning and changing of filter paper, bags or cartridges, delivers nearly dry sludge for easy disposal. Designed for flow rates from 40 to 1000 GPM, separator has wide range of applications from individual machine tools to centralized systems for large groups of machines.

Write No. 25 on Inquiry Card—Page 32

### 150 amp. D. C. Solenoid Contactor



A 150 amp. NEMA Size 4, D.C. Solenoid Contactor is announced by Ward Leonard Electric Co., increasing their present D.C. Contactor line from size 1 to 4. New single and double pole units are designed for use in general pur-

Please turn to page 90





**Clean, Smooth Threads**



**Strong, Straight Shanks**



**Easy-to-Grip Heads**

**BETHLEHEM STEEL COMPANY**  
BETHLEHEM, PA.

*On the Pacific Coast Bethlehem products are sold by  
Bethlehem Pacific Coast Steel Corporation  
Export distributor:  
Bethlehem Steel Export Corporation*



**Full Range of Styles and Sizes**



**Easy-to-Identify Packages**

**BETHLEHEM STEEL**

# FIR PLYWOOD PURCHASING GUIDE



## 1. Insist on DFPA Grade-Trademarks

DFPA grade-trademarks attest quality, performance and value. They appear only on plywood manufactured, inspected and laboratory-tested under the DFPA quality control program to assure conformance to U.S. Commercial Standard quality requirements.



## 2. Choose the right grade for each job

DFPA quality-tested fir plywood comes in two types: 1. *Exterior* (waterproof glue for permanent outdoor exposure); 2. *Interior* (moisture-resistant glue) for use indoors, temporary outdoor uses and sheathing.

Within each type are *appearance grades* to meet the exact needs of any given job. Most popular grades are shown below: (other grades including panels made of other western softwoods, also available)

TYPICAL USE	EXTERIOR-TYPE (Waterproof glue)	INTERIOR-TYPE (Moisture-resistant glue)
Where appearance of both sides important. Cabinet doors, single thickness walls, etc.	EXT-DFPA-A-A	INT-DFPA-A-A
Where only one side will be seen. Siding, paneling, signs, fixtures.	EXT-DFPA-A-C <small>DFPA QUALITY</small>	INT-DFPA-A-D <small>DFPA QUALITY</small>
Special concrete form grades. Both faces sound, solid, smooth.	PLYFORM <small>DFPA QUALITY</small> Ext. PlyForm® (B-B) (maximum re-use)	PLYFORM <small>DFPA QUALITY</small> Int. PlyForm® (B-B) (multiple re-use)
Unsanded structural and maintenance panel. Sheathing, crating, temporary screening.	EXT-DFPA-C-C <small>DFPA QUALITY</small>	PLYSCORD <small>DFPA QUALITY</small> PlyScord® (C-D) (also available with Exterior glue)

**SIZES:** Standard fir plywood thicknesses are from 1/4" through 3/4"; standard size is 4' wide, 8' long. Other thicknesses and sizes are also available, including "king-size" scarfed panels up to 30' and 50' long.

**TEXTURED FIR PLYWOOD** — Fir plywood comes in several smart textured panels for special decorative applications such as siding, paneling, displays and fixtures. These include *Texture One-Eleven* exterior plywood (deep parallel groove pattern, shiplapped edges) and panels with attractive *brushed*, *striated*, or *embossed* surfaces.

**OVERLAID FIR PLYWOOD** — is Exterior fir plywood with resin-fiber overlay permanently fused to one or both sides of panel. *High density* is hard, glossy, abrasion-resistant (use for long-lasting signs, shelving, concrete forms); *Medium density* overlaid plywood is smooth, with texture similar to drawing paper (ideal paint base for signs, fixtures, siding).



**FREE WALL HANGERS** — Handsome 18"x33" wall hanger. Handy fir plywood grade-use-specification guide. Order one for everyone in your firm who specifies fir plywood. Also available, specification portfolio. Includes detailed description all grades, sizes, specialty panels, Commercial Standards requirements. Offer good USA only. Douglas Fir Plywood Assoc., Tacoma 2, Wash., Dept. 192.

For More Information Write No. 206 on Inquiry Card—Page 32

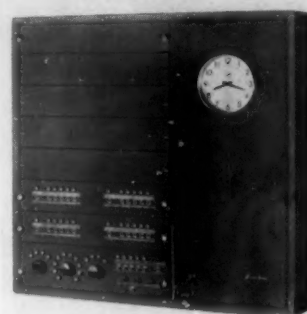
## Products

(Continued from page 88)

pose and machine tool controllers and for switching lamp, battery and other d.c. loads. Features include Solenoid type power plants, compact unit construction and complete parts accessibility. Power plants are available for a.c. operation, and standard coils for 115 and 230 volt d.c. operation.

Write No. 26 on Inquiry Card—Page 32

## Control Panel Provides Automatic Operations



A control panel for automatic operation of lights, heating, air-conditioning, and any other electrically actuated devices has been developed by the Stromberg Time Corp. Called "Scope" for Stromberg Central Operations Panel-Electric, unit is available for electronic operation without special wiring or for synchronous wired operation with system wiring. When operating on four electronic frequencies, it will automatically control as many as 640 circuits, and manual control's permit operation at unscheduled intervals.

Write No. 27 on Inquiry Card—Page 32



"He's a virtuoso on that suppliers' file . . ."

# LOOK

*what you can do with*

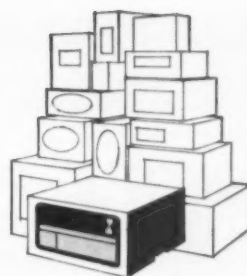
# AVERY

*Pressure-Sensitive*

# LABELS



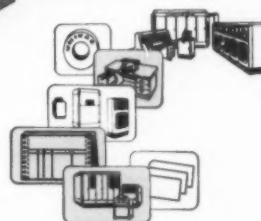
*CUT costs*  
*REDUCE inventories*  
*UNIFY packaging stocks*  
*SAVE time and money*  
*EXPEDITE shipping*  
*IMPROVE product recognition*



**DIRECT BEARING**—Carton identification was costly and cumbersome until McQuay-Norris switched to Avery color-coding labels. Stocks were reduced from 40 to 9 basic label sizes... application time was cut 65%... and the auto parts company had a tight-gripping label that provided clear information quickly.



**GLOWING REPORT**—The Lustra Corp. of America provides an unconditional guarantee of life expectancy on each fluorescent tube and light bulb. Avery self-adhesive labels applied at the end of the tubes over the metal contact pins spell out this guaranteed period neatly and plainly.



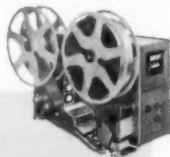
**WORTH 1000 WORDS**—Remington Rand uses miniature self-adhesive line cuts to illustrate planning layouts effectively. UNIVAC salesmen in 100 offices rely on these handy Avery labels to show customers the operating procedures of the company's Data Automation System. Remington Rand salesmen like it... customers do too.



*Always ask for*

## AVERY LABELS

*what a difference they make!*



Avery Labels are manufactured and distributed throughout the world. Write Foreign Operations, Avery Adhesive Label Corp., Monrovia, California, for addresses.

For More Information Write No. 207 on Inquiry Card—Page 32

**AVERY LABEL COMPANY, Div. 130**  
 117 Liberty St., New York 6 • 608 S. Dearborn St., Chicago 5  
 • 1616 S. California Ave., Monrovia, California

☐ Please send me further details on how Avery Labels can save me time and money.  
☐ Please have your sales representative call soon.

Name \_\_\_\_\_  
 Company \_\_\_\_\_ Title \_\_\_\_\_  
 Address \_\_\_\_\_  
 City \_\_\_\_\_ Zone \_\_\_\_\_ State \_\_\_\_\_

**NOW...FROM AUTO-LITE**

## **MORE POWER PER POUND FROM NEW, COMPACT AUTO-LITE GENERATOR**



### **NEW COST REDUCTION SERVICE FOR MANUFACTURER CUSTOMERS**

Programs that include design, engineering, methods, automation and manufacturing are all contributing to the important new cost reduction service of the Electrical Products Group of Auto-Lite. Included are greatly expanded research and engineering activities, facilities for field training and service, and District Managers prepared to assist customers and prospects in their drive for lower costs.

This new Auto-Lite generator is designed for use wherever dependability and efficiency are required: for marine, fleet, automotive and light and heavy commercial industrial applications. Quality engineering means outstanding performance. But let the features tell the story . . .

1. Insulation . . . good for 20 years at 105°C.
2. High-load-capacity AFBMA-approved ball bearings and sintered bronze sleeve bearings.
3. Thermosetting phenolic varnish insulates the armature; retains its strength under great mechanical stress.
4. Brushes balanced for optimum quietness, performance, and long life.
5. Commutator segment insulation is undercut mica . . . total commutator runout held to .0005 in.
6. Armatures are precision built to virtually eliminate vibration.
7. Silver-bearing copper is used to retain physical strength in the commutator even at high temperatures.

Some models are available in the new, lighter Step Frame design. For complete details use the coupon at right.



# **AUTO-LITE®**

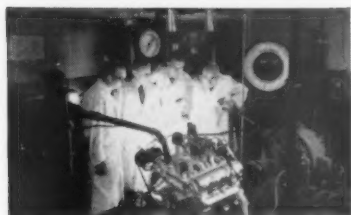
**ELECTRICAL PRODUCTS  
GROUP**

THE ELECTRIC AUTO-LITE COMPANY, TOLEDO 1, OHIO

For More Information Write No. 208 on Inquiry Card—Page 32



## GREATLY EXPANDED RESEARCH AND ENGINEERING FACILITIES ASSIST AUTO-LITE CUSTOMERS



In 19 modern laboratories hundreds of graduate engineers and scientists, assisted by skilled laboratory technicians and draftsmen, are engaged in special projects for the military and industry.

Each individual laboratory specializes in its own area of research and engineering. Any two or more laboratories can be co-ordinated under the Director of Research in a team effort to approach a particular problem or series of problems.

### Attitude of Inquiry

By maintaining a practical attitude of inquiry, Auto-Lite engineering is made vital and anticipates the needs of the many industries we serve.

Low voltage ignition, coaxial starters, cermets, ceramics, transistorized ignition have all been under development in the Auto-Lite laboratories in recent years.

### How you can take advantage of this service

As a part of the new Auto-Lite Cost Reduction Service, the Electrical Products Group District Managers are at your service. They can tell you how Auto-Lite can make available to you the skills and know-how of its 19 engineering and research laboratories, its manufacturing facilities, and its world-wide service organization. They can help you with your cost reduction and product improvement programs.

#### THE ELECTRIC AUTO-LITE COMPANY ELECTRICAL PRODUCTS GROUP • TOLEDO 1, OHIO

Please send me further information on . . .

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| <input type="checkbox"/> Pump & Traction | <input type="checkbox"/> Governor Switches  |
| <input type="checkbox"/> Motors          | <input type="checkbox"/> Starting Motors    |
| <input type="checkbox"/> FHP DC Motors   | <input type="checkbox"/> Voltage Regulators |
| <input type="checkbox"/> Generators      | <input type="checkbox"/> Oil-Filled Coils   |

Name \_\_\_\_\_

Company \_\_\_\_\_ Position \_\_\_\_\_

Address \_\_\_\_\_

City & State \_\_\_\_\_ P

## News

### Static Protective Relay Introduced



It is now possible to use static protective relays for industrial switchgear applications. Allis-Chalmers has a line of transistorized relays that are said to be the first major departure from the mechanical induction disc design introduced about 50 years ago.

Basic circuitry incorporates various types of semiconductors. Moving parts and the problems associated with them have been eliminated. According to tests by Allis-Chalmers, the new type relay exceeds the life and reliability of the mechanical types.

Important for purchasing agents, is the fact that the new

relay could be an easily stocked, non-production item partly because of its size and ease of replacement. The static relay is 1/3 the size of its predecessors. Three single-phase units fit present switchgear and switchboard panel cutouts designed for one single-phase induction type.

The new overcurrent relay will be available in limited quantities this summer with A-C switchgear equipment as production facilities are completed.

### Purchasing Featured In Standards Booklet

Eleven purchasing experts have contributed to a new publication, "Standardization—What's In It For Me?," the printed proceedings of the Ninth National Conference on Standards.

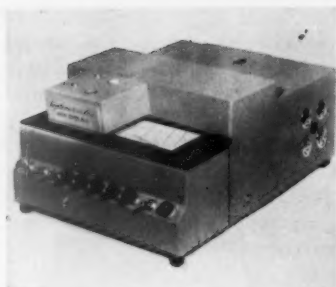
The publication presents 50 papers on the practical and financial benefits of standardization. Many cost savings through standards are described by authorities from government, science, and industry.

The 128 page illustrated booklet is available from the American Standards Association, Dept. PR 61, 70 East 45th St., New York 17, N.Y. The cost is \$4.50 per copy.



The purchasing department of Leece-Neville Co., Cleveland, has presented a Vendor Value Award to Reliable Spring & Wire Forms Co., Cleveland. The award—originated by Purchasing Magazine for recognition of supplier service and cooperation—was accepted by Harmon W. McBride (l.), president of Reliable.

# Office Equipment and Supplies



A new tab card reader that will automatically read 80-column IBM cards at speeds of 1200 columns per minute has been announced by **Systematics, Inc.**, 10 East 42nd Street, New York, N. Y. The new unit uses a mechanical design for registering and transporting the IBM card. The programming unit, designed as an integral part of the reader, provides the full degree of flexibility desirable in automatic input applications.

Write No. 28 on Inquiry Card—Page 32



A new, easy-to-adjust tilt control for office chairs has been developed by **The Bassick Company** of Bridgeport, Conn. Operating on the torsion bar principle, the control is so sensitive that the chair responds to the slightest movement of the body. Also, it absorbs shock at both front and back of the tilting range. There is no sudden, sometimes dangerous jar when the chair tilts

back to stop position. The new unit can be furnished to accommodate almost any chair design.

Write No. 29 on Inquiry Card—Page 32



A tab card file drawer has been designed that fits 24 sizes and styles of file cabinets. Manufactured by **Tab Products, Co.**, San Francisco, it represents the first single, unified filing system to fill all card handling and storage needs.

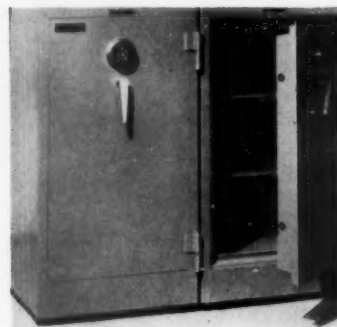
Write No. 30 on Inquiry Card—Page 32



Several new features have been included in the new adding machine recently introduced by **Frident, Inc.**, San Leandro, Calif. A 5½" platen, with adjustable guides, permits insertion of paper in several widths including individual forms up to the full platen width. The "L-Shaped" zero bar simplifies operation of the machine for those trained on conventional keyboards. The key-

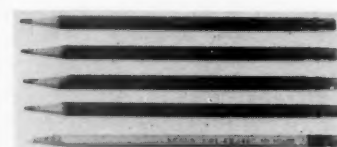
board is open before a previous cycle is completed and pressure requirements have been reduced for the quarter-inch plus bar action to prevent even the fastest operator from "beating" the machine.

Write No. 31 on Inquiry Card—Page 32



One of the first safes manufactured in Canada with Underwriters Laboratories approval has been produced by **Diebold of Canada, Ltd.** in Toronto. Tested and certified by Canadian U.L. to be fire resistant against temperatures up to 1700° for one hour's duration. They have also passed burglary tests made by safe experts attempting to "crack" the safe with burglar tools in three different 20-minute assaults.

Write No. 32 on Inquiry Card—Page 32



A color pencil has recently been introduced that has a lead formulation whose markings are erasable. The new leads, in five colors—vermillion, carmine, blue, green and yellow—are the products of the **Venus Pen and Pencil Company**, Lewisburg, Tenn. All five colors are water-resistant and can be blended to produce variations in color and shade. Samples of this new eraser-tipped, wood-cased pencil are available upon request.

Write No. 33 on Inquiry Card—Page 32



# POLAROID CORPORATION

"Producers of world-famous '60-second' Polaroid Land Cameras"



**"NCR PAPER saves us more than double its cost...each year."**

—POLAROID CORPORATION, Cambridge, Mass.

"We use NCR Paper (No Carbon Required) for many different types of multiple-copy forms. Though the price of NCR Paper is often more than forms with carbon, any extra cost is repaid several times over by the savings in time and mistakes, or in extra convenience. For some forms, the actual out-of-pocket cost—without counting the savings and other advantages—is less than any other alternative.

"We process more forms in less time because we do not have to insert or remove carbons. NCR Paper

forms make it possible for us to pick up originals and copies as a complete unit.

"We estimate NCR Paper saves us its entire cost more than twice each year by reducing operating expenses, thus returning more than 200% annually on our investment."

*Richard T. Kriebel*

Richard T. Kriebel, Secretary  
and Director of Public Relations  
POLAROID CORPORATION

## POLAROID CORPORATION

saves time and money with these NCR Paper forms:

- Voucher Checks
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- Industrial Orders
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ELIMINATES  
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## Association News



The officers and directors for 1959-60 were sworn in by F. Stan Romanse.

### New York Association Installs President



New president George W. Baker presented an inspiring message to the group in his introductory address.



F. Stan Romanse (r.), outgoing president of the New York association, presents a certificate to national director David S. Gibson in appreciation of his work for the association for many years.

THE ROMANTIC islands of Hawaii provided the setting for the annual installation meeting of the Purchasing Agents Association of New York. About 150 purchasing agents and their wives attended the meeting—held aboard a sightseeing yacht as it cruised around Manhattan island.

Music for dancing and entertainment was provided for the group by an orchestra from the Hawaiian Islands. A delicious buffet supper was served after the business meeting was concluded.

Officers elected to serve for

1959-60 were—President: George W. Baker, Port of New York Authority; 1st Vice President: Gailon C. Fordyce, American Cyanamid Company; 2nd Vice President: Donald T. Keliher, United States Metals Refining Company; Treasurer: Lewis A. Norris, New York Stock Exchange.

Members elected to the board of directors were Peter P. Heaney, DeJur-Amsco Corporation; William J. Heubach, Union Bag-Camp Paper Corporation; and Robert F. Ames, United States Steel Corporation.



Tom Thomas of Shell Oil Co. won the "Best Buy" award. His prizes: a cash award from the association and a free trip to Bermuda for two from Marion Brennan of Eagle Airways, Ltd.

For More Information Write No. 210 on Inquiry Card—Page 32→

**PURCHASING**



# GAYLORD Gives Your Packaging a Lift

Let Gaylord lighten your load when you come to weighty packaging decisions. A nearby Gaylord man will analyze your entire packaging program . . . help you tone up the weakling containers . . . tone down the muscle-bound.

For tough corrugated boxes that deliver better protection, better promotion, better profit . . . put the weight on that experienced box-builder—your G-man. He's ready, now.



**GAYLORD**  
CONTAINER CORPORATION



HEADQUARTERS, ST. LOUIS  
PLANTS COAST TO COAST

DIVISION OF **Crown Zellerbach Corporation**



## **Association News**

### **Advance Note For 1960:**

### **N.A.P.A. Planning for Convention at L.A.**

**T**HE 1959 N.A.P.A. Convention is now part of history. Those purchasing agents who had the good fortune and foresight to attend are well aware of the tremendous values received.

But it is not too early to start planning for the 1960 convention, to be held in Los Angeles, Calif., from May 22 through May 25. A great deal of work has already been done by the hardworking committeemen to assure everyone of an informative, educational meeting.

E. Benton Long, purchasing agent, U. S. Lime Products Division of Flintkote Company was appointed general convention chairman. Victor Quam, chief deputy purchasing agent of the County of Los Angeles, was appointed general program chairman.



**View of world famous Wilshire Boulevard looking east across MacArthur Park.**



**Charles Perkins, Union Oil Company of California, president of the Purchasing Agents Association of Los Angeles.**

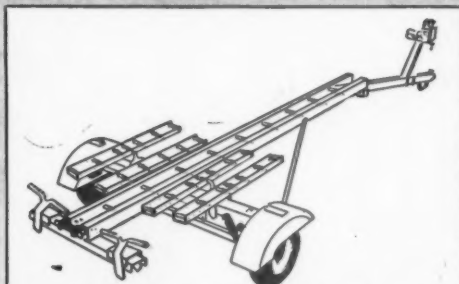


**E. Benton Long, U. S. Lime Products Division, Flintkote Company, general convention chairman of the 1960 N.A.P.A. Convention.**

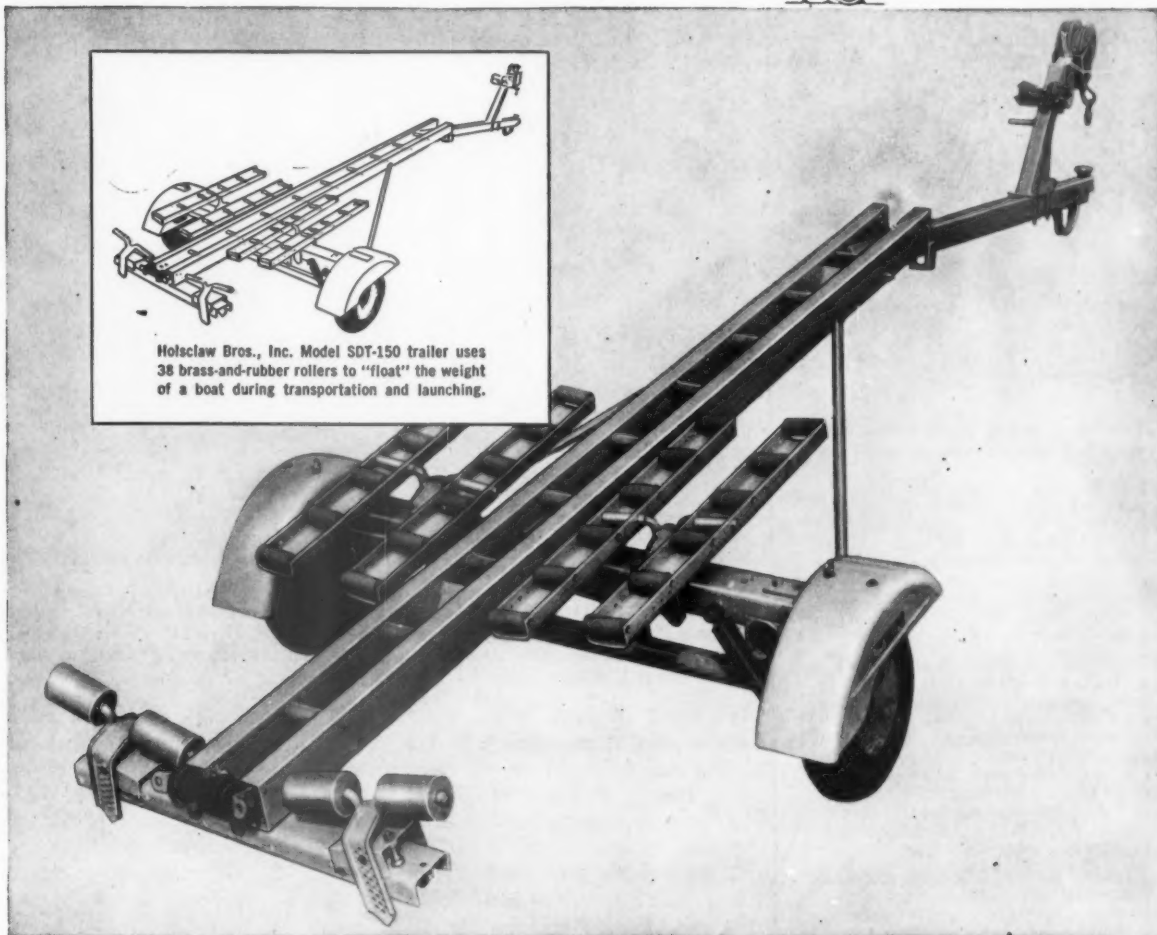


**Victor Quam, County of Los Angeles, general program chairman, 45 Annual N.A.P.A. Convention.**

**NOW BOATS ROLL ON BRASS!**



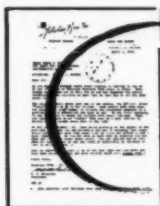
Holsclaw Bros., Inc. Model SDT-150 trailer uses 38 brass-and-rubber rollers to "float" the weight of a boat during transportation and launching.



## CHASE® BRASS TUBE REPLACES STEEL BUSHINGS and gives manufacturer production savings!

Holsclaw Brothers, Evansville, Indiana, make trailers for transporting and launching pleasure boats. In the past, they used steel bushings for each of the many rubber rollers carrying the weight of the boat. Mounting these rollers to steel was expensive and the steel rusted rapidly, causing seizure of the rollers.

Then Holsclaw changed to Chase® brass for making these bushings. Brass has long been known for its ease of bonding to rubber—but look what else the manufacturer says:



"We had always thought that brass would ... be the answer...but made the unforgivable mistake of assuming brass would cost so much more than steel... You can imagine how we felt when we learned that we could use brass at absolutely no increase in our cost or selling price (.002¢ materials cost increase was more than offset by the better production)."

Chances are you can produce a better product at the same or lower cost by turning to copper, brass or other copper alloys. Find out now—by talking it over with your nearest Chase representative, or writing Chase at Waterbury 20, Conn.



# Chase



**BRASS & COPPER CO. WATERBURY 20, CONN.**  
Subsidiary of **Kennecott Copper Corporation**

THE NATION'S HEADQUARTERS FOR ALUMINUM • BRASS • BRONZE • COPPER • STAINLESS STEEL AND FORGINGS

Atlanta Baltimore Boston Charlotte Chicago Cincinnati Cleveland Dallas Denver Detroit Grand Rapids Houston Indianapolis Kansas City, Mo. Los Angeles Milwaukee Minneapolis Newark New Orleans New York (Maspeth, L. I.) Philadelphia Pittsburgh Providence Rochester St. Louis San Francisco Seattle Waterbury

AUGUST 3, 1959

For More Information Write No. 211 on Inquiry Card—Page 32

99



From raw material to finished product, she's the expert and the boss at every step.

For the same reasons, only the company who controls the metallurgical quality of beryllium copper from raw ore to finished strip can assure you the most accurate dimensional tolerances obtainable commercially, oxide-free strip surface for prolonged die life and precise metallurgical properties tailored to your specific needs.

The Brush Beryllium Co. and its Pennrold Division offers you the world's most completely integrated facilities for the production of the finest precision beryllium copper strip rolled today. With it, you get complete application and fabrication field engineering service, the widest range of sizes (down to 0.0005" thick) and the largest coil size in the industry (for greater uniformity and faster delivery).

The same precise metallurgical control and complete field engineering service is also available to users of precision rolled phosphor bronze and other special purpose alloy strip.

For more information, quotations, or fast delivery—call your nearest Pennrold Service Center, today!



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Philadelphia, Pa.—MOhawk 4-6749  
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Chicago, Ill.—GLadstone 5-7850  
Detroit, Mich.—TUxedo 4-2530  
St. Louis, Mo.—SHerwood 1-6423  
Greensboro, N. C.—BRoadway 3-5973  
Los Angeles, Calif.—PLEasant 3-5531

For More Information Write No. 212  
on Inquiry Card—Page 32

## Association News

### Panel of Experts Takes Over Grand Rapids Meeting



Before the Grand Rapids meeting, a group of experts discuss "better values." Seated (left) is Lou Larson, Newaygo Engineering Co. listening to William R. Shirley of Lear, Inc. Standing are (left to right) F. W. Oldenburg, American Box Board, Henry Apol, Bergsma Brothers Furniture Co., and William Van Loo, American Seating Co.

A panel of some of the most expert men in their fields in the Grand Rapids area took the reins at a recent meeting of Grand Rapids Association of Purchasing Agents.

With today's profit squeeze in mind the Education and Value Analysis Committee considered four topics for discussion at the meeting. William R. Shirley, purchasing analyst with Lear, Inc., was assigned the topic, "Better Value Through Design Re-evaluation and Modification."

William R. Van Loo, chief process engineer at the American Seating Company spoke on, "Better Value Through Better Manufacturing Methods."

Purchasing Agent Lou Larson of Newaygo Engineering Company and chairman of the Standardization and Value Analysis Committee Of the West Michigan Assn. spoke on "Better Value Through Standardization."

F. W. Oldenburg, senior vice president of marketing at American Box Board discussed, "Better Value Through Better Packaging."

The evening's program was moderated by Henry Apol, local chairman of the Value Analysis and Standardization Committee. Mr. Apol is purchasing agent for Bergsma Brothers Furniture Co.

### Central Illinois Hears Talk On Standardization

The election of officers was held at a recent meeting of the Purchasing Agents Association of Central Illinois. H. E. Modrow, Sangamo Electric Co. was elected president.

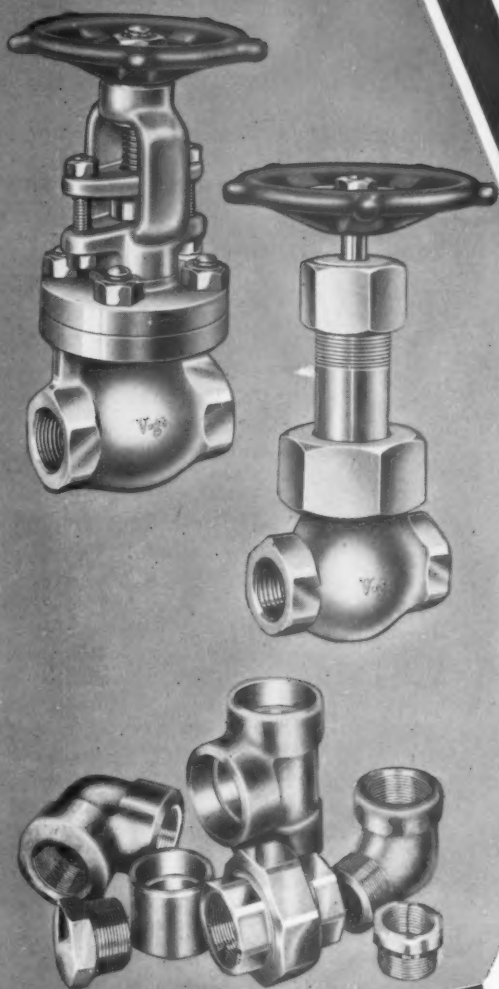
Serving with him for the coming year will be: Loren G. McGary, Ideal Industries, Inc., vice president; Roland G. Lottman, Le Tourneau-Westinghouse Co., secretary-treasurer; and J. M. Anderson, Pana Refining Company, national director.

Ken Cruise, purchasing agent of Bendix Aviation Corp., Kansas City, Missouri was the principal speaker at the meeting. Mr. Cruise spoke on value analysis and standardization. He showed how Bendix Aviation uses them to good advantage.



Look  
to ..

# Vogt



**FOR FORGED  
STAINLESS  
AND  
ALLOY STEEL**

**Valves, Fittings  
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**IN STOCK AND READY TO GO!**

BE SURE to consult the new Vogt Catalog F-10 when in need of top quality forged stainless and alloy steel piping products for severe operating conditions.

The complete Vogt line includes sizes and types to fit your process requirements with high resistance to corrosion, complete freedom from product contamination, and long service life.

**HENRY VOGT MACHINE CO.  
Louisville 10, Ky.**

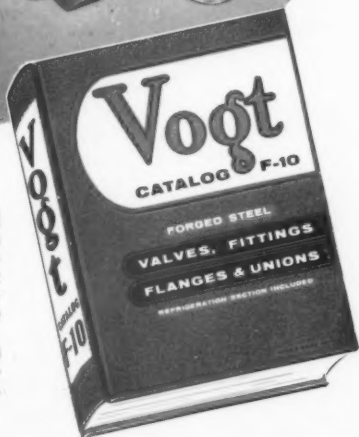
SALES OFFICES:

New York, Chicago, Cleveland, Dallas, Camden,  
N.J., St. Louis, Charleston, W.Va., Cincinnati

**CATALOG F-10**

Vogt stainless and alloy steel materials are shown in their application to specific types of piping products in this 432 page catalog.

Write for a copy on your company letterhead. Address Dept. 24A-FPM.





## **SURVEY DISCLOSES INDUSTRY'S NO. 3 SKIN HYGIENE PROBLEM: WASTE SOAP**

### *Here's The Answer To It From SBS*

The most difficult three industrial skin hygiene problems, as rated by 2,177 major plants recently surveyed, are:

1. SKIN DISEASE
2. REMOVAL OF TOUGH SOILS
3. WASTE OF SOAPS

Closely associated with the actual problem of skin disease is the costly waste of soaps in *all* plant areas. Liquid soaps run off hands too easily, other types melt or spill. Where wasted soap accumulates, extra housekeeping expenses are involved, sub-sanitary conditions exist and worker dissatisfaction mounts. Often the combined cost of soap waste and resulting maintenance can add up to more than the original cost of the soap supply. Small wonder industry rates it as such a problem!

What's the answer to it? Ask an SBS representative to show you "Operation Pinpoint", 10 minute sound slide digest of the national survey, and you'll see how a *planned corrective program* can solve all these skin hygiene problems. Since SBS produces a *complete range of cleansers*, he can suggest the right cleanser for each job. For the safest, savingest answer to skin disease, tough soils, and soap waste, write today . . . Dept. 5H.

*the washword of industry*

**SBS**  
sugar beet products co.

SAGINAW, MICH. • Los Angeles, Calif. • Newark, N.J.  
CANADA: Chemical By-Products, Ltd., Toronto, Ontario



5J.

For More Information Write No. 214 on Inquiry Card—Page 32

102

## **Purchase Order Analysis**

(Continued from page 71)

another purpose, say in assessing the value of standards to the engineering division, it might be the number of units. In most instances two or more are required to show the situation in proper perspective.

The grand totals in terms of three of the indexes are as follows:

Code	Number of Dollars	Number of Items	Number of Units
A.	32%	33%	72%
B.	38	53	24
C.	30	14	4
Totals	100%	100%	100%


The next step was to find out what part of the B items were really standardizable.

We were anxious to get this figure and therefore we made an analysis after the first 36 weeks of operation. We counted the number of times each kind of an item was ordered during this period.

Obviously, we could not expect to standardize any kind of any item which occurred only once or twice in a 36-week period. But as we proceeded down the list, it was also necessary to look into the number of types under each kind. For example, in a group of 11 kinds which occurred between 16 and 20 times, we found over 200 different types. These 200 were in turn examined carefully and it was found that only 5 warranted investigation for possible standardization.

For all practical purposes it turned out that this group was about the midpoint of the group dollarwise so that we could say that of the entire B group—those potentially standardizable — just about one-half might be profitably standardizable. When we eliminated all of the special items, and about one-half of all the potentially standardizable items, as not being standardizable in fact, we got down to a realistic set of figures which spelled out the progress we had made in comparison with the goal that we could expect to reach.

For More Information Write No. 215  
on Inquiry Card—Page 32→  
**PURCHASING**



**BARNES  
BANDS ARE  
BEST BY TEST  
FOR FRICTION  
CUTTING!**

## **BARNES BAND SAWS GIVE YOU MORE FOR YOUR MONEY**

Barnes Hard Edge, Flexible Back Band Saws are made for high production metal sawing at lowest cost-per-cut.

Barnes produces 4 types of band saws—a total of 70 specifications—for all cut-off and contour sawing. You are sure of the right blade for lowest cost per cut.

**ARC-LINE Raker Set  
ARC-LINE Wavy Set**

**BARNES SKIP TOOTH  
BARNES HOOK TOOTH**

All Barnes band saws are packaged for your convenience:  
100 ft. coils, 250 to 500 ft. random length coils  
and factory welded bands.

*Call Your Barnes Distributor for the best in blades*



**W. O. BARNES CO., INC.**

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## Vibration can't loosen Loctite-treated fasteners

The HOMELITE six-horsepower chain saw weighs only 19 pounds. So much power per pound requires maximum resistance to vibration in the fasteners holding parts together.

LOCTITE, the liquid lock washer, locks all critical fasteners on this gasoline-driven chain saw... providing dependable service in rugged field use.

LOCTITE Sealant is a liquid which hardens between metal parts to form a bond with greater holding power than any mechanical locking device. The added holding power of LOCTITE-treated fasteners allows Homelite to use reduced tightening torques and thus avoid stripping threads in the aluminum castings.



While adding to product reliability, LOCTITE provides substantial cost savings. At Homelite, the 27 different size fasteners required in assembling the chain saws are treated with LOCTITE by tumbling in plastic bags. Treated screws store for days... lock only when assembled.

There's a Loctite application method suited to all production requirements. If your product faces shock and vibration in use, you can eliminate breakdowns due to loose threaded fasteners... cut service cost and customer complaints... by using Loctite. Write for literature and free sample.



**LOCTITE<sup>®</sup> SEALANT**  
AMERICAN SEALANTS COMPANY  
117 Woodbine St., Hartford 6, Conn.  
In Canada: J. S. Parkes & Co., Ltd., Montreal

For More Information Write No. 216  
on Inquiry Card—Page 32

## Stockholders

(Continued from page 63)

standards are met. Sometimes Dennison's customers are asked their opinions about the quality of the material and how it compares with that of other suppliers.

Once a vendor has been O.K.'d, he can look forward to a fair amount of business each year. For the company philosophy is this: "We aim to buy, Just as we hope to sell, on merit alone."

### Testing and Control

A department that works closely with purchasing is testing and control. It makes sure that all purchased material meets the standards set up by Dennison. Samples of incoming shipments are checked and the vendor's technical staff is consulted when flaws are found.

One way to reduce the number of these flaws is by making the specifications on each order absolutely clear. This is purchasing's responsibility, which it carries out by specifying material in detail. Vendors know exactly what is expected of them before they even bid on an order, thereby leaving no room for confusion and controversy after it has been completed.

The normal inventory policy at Dennison is a 60-day supply. MacKenzie believes that this quantity minimizes risk of shortages, makes most efficient use of warehousing space, and maintains a healthy turnover. However, the policy is flexible enough to allow for sudden changes in the business climate. Keeping inventories in balance is one of his major concerns.

A major reason for the success of this inventory policy is the cooperation of suppliers. Many of them carry inventory in their own plants and warehouses until it is ordered. Others go out of their way to meet rough delivery schedules when necessary.

Dennison's shareowners have indicated—through letters and personal contacts—their admiration and appreciation of the purchasing department. Here is another example of purchasing's contribution to profits—not only for the company but for each and every stockholder.

## How Effective Are Your Buyers?

(Continued from page 70)

an increase in the average dollar value per order. This, in turn, should bring an increase in the cost of issuing an order. But at the same time, it will probably decrease the cost of committing a dollar. It will also increase the hours spent per buyer per order and decrease the purchase orders issued per buyer.

The figures of one company cannot be a criteria for any other company. The responsibilities and maturity of one organization are different from those of all other organizations. The statistics may and should change as the business level and activity of the company change—for example, from an operation that is predominantly research and development to one that is strongly production.

The buyer must be judged only in the purchasing climate in which he works. This means that buyers of high value items and low value items should be evaluated separately. Don't lose sight of the fact that we all play the game according to the rules. For example, if counting purchase orders placed per buyer is a measure of performance, then effort will be made to get a volume of orders out with small consideration given to overhead cost of operating the department.

Reviews should be semi-annual. The buyer should fill out his review by himself before the meeting with his supervisor.

### Summary

To tie the loose ends together:

1. Buyer evaluation is related to the range of responsibility charged to purchasing.
2. The maturity of the purchasing organization and its operation influence the scope and results of the buyer's work.
3. Evaluate the buyer in such a manner that his procurement efficiency is increased.
4. Build the buyer evaluation program around three basic areas: personal qualities, professional competence—intangible, and professional competence—tangible.

For More Information Write No. 217  
on Inquiry Card—Page 32→  
**PURCHASING**





## Call Crucible for stainless of uniform excellence

The lustre of Crucible stainless is achieved through precision-rolling on modern mills. Uniform physical properties are maintained by checking each heat — while electronic measuring controls ensure accurate gauge. Such methods produce coil after coil of uniform excellence. For stainless in all gauges down to .010" and in all strip widths, call or write: Crucible Steel Company of America, The Oliver Building, Mellon Square, Pittsburgh 22, Pa.

**CRUCIBLE STEEL COMPANY OF AMERICA**

CANADIAN DISTRIBUTOR — RAILWAY AND POWER ENGINEERING CORP., LTD.

## Purchasing People

(Continued from page 51)

**Robert R. Pierce** has been named purchasing agent for **Stromberg-Carlson, San Diego, Calif.** In his new position Mr. Pierce will be responsible for all



**Robert R. Pierce**

purchasing activities at the San Diego facility. Prior to his appointment at Stromberg-Carlson, he was purchasing agent for Bill Jack Scientific Instruments at

Solano Beach, Calif. Before that he was a buyer for Scripps Institution of Oceanography at La Jolla. Mr. Pierce attended the University of Idaho where he majored in Business Administration. He has also attended UCLA seminars on purchasing procedures.

**James S. Oatman** has been appointed director of purchasing, and **Harry M. Henry** named purchasing agent of **Ben-Mont Papers, Inc., Bennington, Vt. Mr.**



**J. S. Oatman**



**H. M. Henry**

Oatman has been with Ben-Mont for thirty years. He was formerly manager of planning and scheduling. For many years he was as-

sistant to the general manager of Ben-Mont. Mr. Henry was formerly purchasing agent for the Dobeckmun Company of Cleveland, with which Ben-Mont is affiliated.

Appointment of **William Peters** as director of purchases for **Boston University** has been announced. Mr. Peters, has been purchasing agent for Winslow Brothers & Smith of Boston for more than 20 years. He is a member of both the New England and National Purchasing Agents Associations.

**Thomas M. Porter** has been appointed director of purchases for the **National Electric Division, H. K. Porter Company, Inc., Mr.** Porter was formerly with the plant apparatus department of Westinghouse Electric. His headquarters will be at the National Electric plant, Ambridge, Pa. He received an M.S. degree in Engineering and Business Administration from Dartmouth College, Hanover, N. H. in 1952.

## NEW NYLON & THERMO-PLASTIC parts from GRC

Economically mass produced on fully automatic patented machines, GRC nylon parts are available from stock in many sizes and types. GRC uses single cavity, techniques, molds in one automatic cycle, gets accurate, uniform parts, ready for immediate use.

These advantages, these economies, apply too, to tiny made-to-order parts to your specifications... in quantities of 25,000 to many millions. Write for bulletin describing GRC's unique method for injection molding small plastic parts or send prints for quotation. Ask about our zinc alloy die castings too!

**NO SIZE TOO SMALL,**  
Maximum:  
1 1/4" long  
— .03 oz.



## NOW! NYLON NUTS AND SCREWS

- Brand new nylon hex nuts in ten sizes (#2 thru 5/16") added to GRC's complete line of nylon screws. GRC's single cavity molding technique gives exceptional uniformity, accuracy, and economy to the outstanding properties of nylon fasteners.
- Take advantage of nylon high strength to weight ratio, built-in electrical insulating properties, stability, resilience and elasticity. GRC molded nylon fasteners—nuts and screws, set screws, screw insulators, washers, etc.—are available from stock in a wide range of types, sizes and lengths.

**WRITE, WIRE, PHONE NOW for GRC's new catalog of die cast and molded fasteners.**



**GRIES REPRODUCER CORP.**

World's Foremost Producer of Small Die Castings

39 Second St., New Rochelle, N.Y. NEw Rochelle 3-8600

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Clip this to your letterhead

REQUEST FOR INFORMATION

ON: **GRC**

## NYLON NUTS AND SCREWS

- ☐ Mail Literature & prices. Don't send representative
- ☐ Have representative phone for appointment
- ☐ Send Samples
- ☐ Various
- ☐ Specific thread size

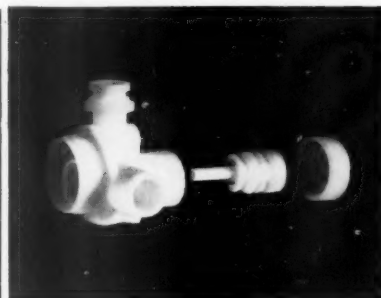
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## Purchase for Profit!

*Specify Chicago Molded*

These injection molded nylon shapes compose a unique Venturi valve unit used to regenerate the mineral bed of a Culligan Water Softener. Previously, they were brass. By switching to Chicago Molded thermoplastics, performance and durability were improved, material cost cut, machining and finishing eliminated. Your job may be smaller or very large, may require a different plastic, compression or transfer molding. To purchase for profit, specify:

**CHICAGO MOLDED PRODUCTS CORPORATION**  
1028 North Kolmar, Chicago 51, Ill.

For More Information Write No. 219 on Inquiry Card—Page 32

**PURCHASING**

Appointment of **Arthur H. Crouch** as purchasing agent of **Wilkerson Corp., Englewood, Colo.**, has been announced. Mr. Crouch joined the company as



**Arthur H. Crouch**

stock control manager. Prior to this he was in the sales department of **Electrolarm Co.** and assistant manager of pricing department of the **California Company**, both Denver concerns. He also spent some time as a laboratory technician for **Carbide and Carbon Chemicals Corp.** in W. Va.

**International Business Machines Corporation** has announced the appointment of **Martin C. Stutzbach** as purchasing agent for research laboratories in **Westchester and Poughkeepsie, N. Y.** He will also be responsible for the administration of service contracts. Mr. Stutzbach will make his headquarters at the **Mohansic**



**Martin C. Stutzbach**

**Laboratory, Yorktown Heights, N. Y.** Mr. Stutzbach joined **IBM** in 1951 as a member of the research organization. Subsequently he held various technical and administrative posts. In 1951, he joined the engineering contracts department as a contract negotiator. Later he became technical assistant to the manager of research finance and procedures. In 1957 he was named manager of capital equipment services, a position he held until his present appointment.

**Lester H. Keepper**, has been promoted to senior buyer of chemicals for **Abbott Laboratories, North Chicago, Ill.** Mr. Keepper began his career at **Abbott** in 1929 as a chemical operator. In 1935 he transferred to the cost department, and in 1940 to the purchasing department. He attended **Illinois Wesleyan** and **Northwestern Universities** and is a graduate of the **Industrial Management Institute of Lake Forest College.**



## Purchase for Profit!

*Specify Chicago Molded*

Linear polyethylene replaces brass in this deep-well pump component injection molded by **Chicago Molded for Red Jacket Manufacturing Co.** By applying the right plastic material and molding method, **CMPC** solved a long-standing corrosion problem and improved pump efficiency. Cost—a fraction that of brass with finishing eliminated. By any measure of value analysis, this is *purchasing for profit!* Your part cost problems are our business—call, specify:

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on Inquiry Card—Page 32

AUGUST 3, 1959



## with CONTINENTAL® CHAIN LINK FENCE

This is the fence that gives you extra protection, extra resistance to rust and corrosion, because it is the only fence made of stronger, longer lasting **KONIK STEEL**. H-section line Posts are 15 percent stronger, too. Terminal posts and post caps are heavier, more rugged. Extra strength throughout, with galvanizing after weaving, mean longer fence life at lower cost per year, without maintenance!

Write today for your Free **PLANNED PROTECTION Manual**

**CONTINENTAL STEEL CORPORATION**  
KOKOMO, IND.

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# MACHINE WORK & SPECIAL MACHINE BUILDING


We have large, medium and small machine tools available for machine work and the building of special machinery.

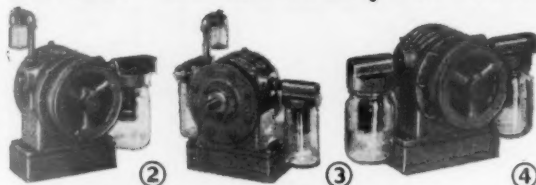
We will be pleased to receive your inquiries.

## SUN SHIP

BUILDING & DRYDOCK COMPANY  
CHESTER, PA.

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①  Need an original equipment  
**VACUUM PUMP?**  
See how **GAST** cuts your costs



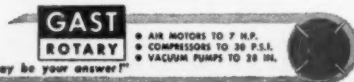
Above (1) is basic Model 1550 Vacuum Pump—(one of 13 sizes). For active customers, Gast builds this model in dozens of variations. Specific needs are met for vacuum, pressure, lubrication, drive and type of service.

For example, (2) is equipped for general purpose vacuum. (3) provides both vacuum and pressure for paper feeding. (4) oil-less model has carbon vanes; never needs oil. (5) has new constant level oiler for rigorous industrial duty.

You save because Gast ingenuity and tooling and manufacturing efficiency permit high quality at production prices.

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Gast Manufacturing Corp., P.O. Box 117-A Benton Harbor, Mich.



"Air may be your answer!"

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rugged  
compact  
easy-to-use



## Zeiss-Kollmorgen Borescopes

Precision manufactured for  
detailed inspection of tubes,  
tanks, cavities, injectors,  
pipes, cylinders, gun bores

Designed in sizes and models for every job. Diameters from .100", lengths to 45 feet or longer. Self-illuminated. Choice of viewing heads for different angles of observation. See how these versatile instruments can increase inspection efficiency. Adaptable for photography. Write for Bulletin 305.



### KOLLMORGEN

optical corporation  
NORTHAMPTON, MASSACHUSETTS

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## STAINLESS!



### —from inlet to tip

Now the superlative Mastergauge is available in a wider range of corrosion resistant tubes and sockets than any other pressure gauge.

Check the adjoining list. And remember that tube socket and tip are fused into one piece by the exclusive Marsh "Conoweld" process.

Marsh alone combines the copper-clad "Marshallloy" case, the finer Mastergauge movement, the Marsh "Recalibrator", the new "Safecase." Ask for data covering your specific needs.

### SIX CHOICES of tubes and sockets

**4130 alloy steel tube** with alloy steel tip and socket.

**403 stainless steel tube** with alloy steel tip and socket.

**403 stainless steel tube** with 416 stainless tip and socket.

**316 stainless steel tube** with alloy steel tip and socket.

**316 stainless steel tube** with 303 stainless tip and socket.

**"K" Monel tube** with Monel tip and socket.

MARSH INSTRUMENT COMPANY, Division of Colorado Oil and Gas Corporation, Dept. G, Skokie, Ill. • Marsh Instrument & Valve Co., (Can.) Ltd. • 8407 103rd St., Edmonton, Alberta • Houston Branch Plant 1121 Rothwell St., Sect. 15, Houston, Texas

## MARSH



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PURCHASING



# POLYETHYLENE miracle tape STICKS TO STAY!



**101 in-plant uses  
with any plastic film,  
paper, metal!**

Pressure sensitive • Waterproof  
Handles easily • Sticks fast • Won't  
shrink, dry out or crack • Doesn't  
get brittle • Send for sample and  
complete information today!

## GERING

Miracle Tape

GERING PLASTICS  
division of STUDEBAKER-PACKARD CORP.  
Kenilworth, N. J.

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**Dust Protection**  
your workers  
will welcome and wear  
in even the HOTTEST weather



## FLEX-A-FOAM

### Dust Masks

- **Ideal for Hot Weather.** Filter's porous action absorbs and actually exhales body heat.
- Flex-A-Foam's lightweight (only 1 ounce complete) makes it cool and comfortable to wear — not hot and cumbersome like old-fashioned respirators.
- Flex-A-Foam is easier to breathe and talk through than an ordinary pocket handkerchief — does away with that stuffy, smothered feeling.

#### UNMATCHED ECONOMY

Flex-A-Foam is the lowest priced quality respirator on the market today.

Flex-A-Foam's washable filter outlasts throw-away type by more than 100 to 1.

Fewer filter replacements with Flex-A-Foam Dust Masks mean fewer lost production hours.

**Your best Ounce of Protection against Irritating Dust**

Sample only  
**\$1.45**  
postpaid  
(Industrial price only)



FLEXO PRODUCTS, INC., Westlake, Ohio

For More Information Write No. 226 on Inquiry Card—Page 32  
AUGUST 3, 1959



Concentration on design and production of quality ball bearings for all kinds of uses over a 50-year period has taught us a lot. Like how to move fast when sudden new engineering needs arise. How to keep production flexible when everybody wants everything right now. How much worth there is—to our customers and to us—in pride of workmanship and real understanding of a supplier's duty to meet "when-promised" delivery dates. If things like this make sense to you, talk to us about your ball bearing requirements, whatever they may be. Bearings Company of America Division, Federal-Mogul-Bower Bearings, Inc., Lancaster, Pa.



BEARINGS COMPANY OF AMERICA  
DIVISION OF  
Federal-Mogul-Bower Bearings, Inc.

For More Information Write No. 227 on Inquiry Card—Page 32

## Employment Service

### **PURCHASING AGENT**

Minimum 5 years experience, job lot or production purchasing, steel, forgings castings, stampings, outside machining, assembled components. Ability to negotiate and expedite. Prefer B/S Bus. Adm. or equivalent. We are a progressive company located in Western Mich. Please send resume to: Box 524.

**Experience:** Three years purchasing and accounting with leading company in electronic and missile field. Expediting, analyzing bids, coordinating activities between engineering and vendor and interviewing and negotiating with salesmen. Thorough background in inventory control and scheduling, shipping, office management. Familiar with government procurement regulations and specifications.

**Education:** B.S. bus. adm.—major in marketing.

**Will relocate.**

**Write:** Box 416

**Experience:** Four years as plant purchasing agent for multi-plant manufacturer of medium and heavy machinery, following home office training in purchasing. Active in cost reduction, product redesign, and foremen's training programs. Desire more challenging position, including additional supervisory responsibilities.

**Education:** B.S. in bus. adm., majoring in industrial management. Graduate courses in economics.

**Will relocate—U. S. or abroad.**

**Write:** Box 413

**Experience:** Seven years as assistant purchasing agent of an industrial plant. Have done heavy buying and experienced in all phases of purchasing. Also have a total of four years experience in production shop, shipping and receiving department. Have excellent employment record, willing to learn and work hard.

**Education:** Evening course in business administration.

**Prefer:** Suffolk or Nassau County, Long Island, N. Y.

**Write:** Box 422.

**Experience:** Fifteen years of well-grounded purchasing background. Bought electronics gear and all types of mechanical apparatus. Know cost accounting, price analysis, negotiation techniques. Major emphasis has been in the field of government contracts. Know ASPR, government procurement principles and procedures. Have negotiated all types of contracts; cost-plus-fixed fee, maximum-price and incentive type.

**Education:** LLB, member of D. C. and Va. Bars—Master in business administration—majored in contracts and accounting.

**Will relocate.**

**Write:** Box 425

**Experience:** Nineteen years with large corporation—two years in stock room, production clerk on industrial items and defense projects for two years. Requisition clerk on defense products four years. Production supervisor on defense products with seven production people directly responsible to me. Three years as field representative in purchasing on government orders. Two years as specialist purchasing exec. Aircraft operation to present.

**Education:** Three years college in Chem. Eng.—Production Courses.

**Will relocate.**

**Write:** Box 424

### **Listings in this department are offered without charge.**

Both purchasing department personnel interested in changing jobs and employers in search of replacements or additions to their departments may take advantage of this service. When writing, specify whether you want the applicant's form or the employer's form. Address all correspondence—whether for forms, or in answer to an employment advertisement, to: Box No., Employment Service Department, PURCHASING Magazine, 205 East 42nd Street, New York 17, New York.

### **DIRECTOR OF PURCHASES**

Multiple-division Mid-West machinery manufacturer, leader in its industry, with sales in excess of \$45,000,000, is seeking a man of executive caliber to take charge of all purchasing activities, reporting to an officer and director. You may apply in confidence directly to the company, stating salary requirements, all qualifications and personal information via; Box 525

**Experience:** Fourteen years experience in buying M.R.O. supplies, office equipment and lumber. Heavy experience in packaging, supervised perpetual inventory system. Head of dept. purchasing \$1,000,000 a year. Handled contract negotiations.

**Education:** B.S. bus. adm. major in marketing, N.A.P.A. courses.

**Will relocate.**

**Write:** Box 423.

**Experience:** Fifteen years extensive purchasing experience with major aircraft engine company including expediting and buying of stampings, molded and extruded rubber, gaskets, rivets, mill and hardware supplies, cold headed and finished parts.

**Education:** Certificate traffic manager's institute. Certificate international accountants society in accounting. Company conducted lectures on purchasing procedure.

**Will relocate.**

**Write:** Box 414

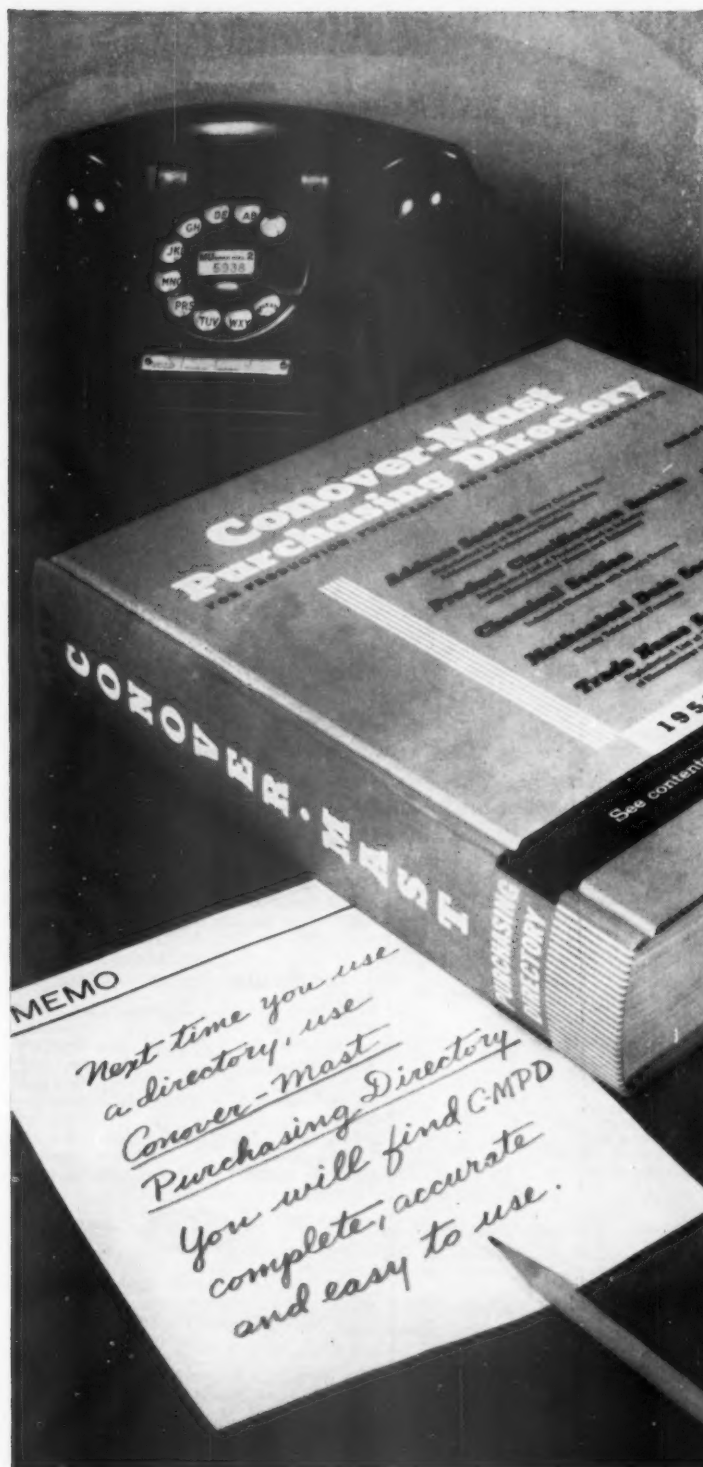
**Experience:** Currently employed with large automotive manufacturer expediting purchased parts. Have had work experience in the following departments; purchasing, traffic, production control, accounting, material handling, industrial relations.

**Education:** B.S. bus. adm.—major in marketing. One year formal study in industrial management courses—studied; purchasing, traffic, accounting, budgeting.

**Will relocate.**

**Write:** Box 415

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## Includes

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NUMBER OF EMPLOYEES

TRADE NAMES

and the **PRODUCTS** of firms  
selling to industry

*New!*

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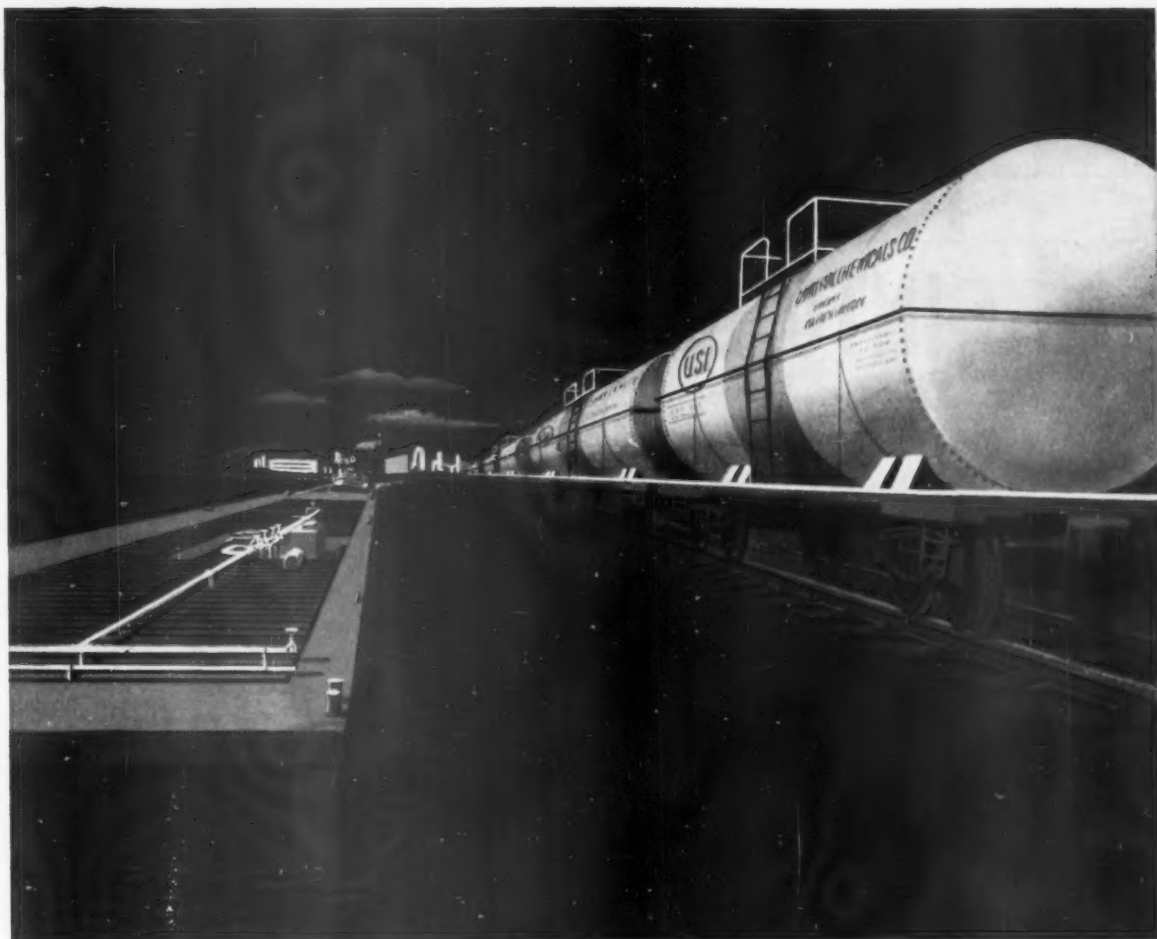
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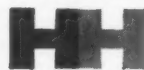
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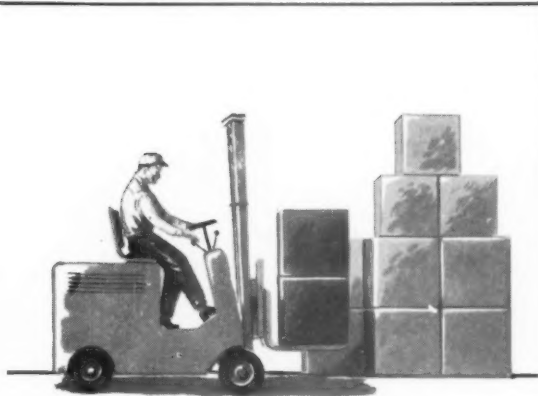
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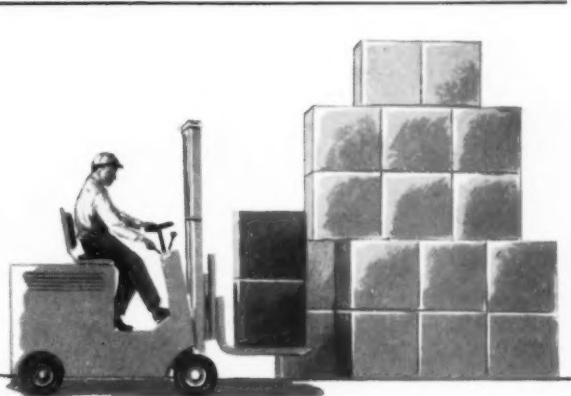
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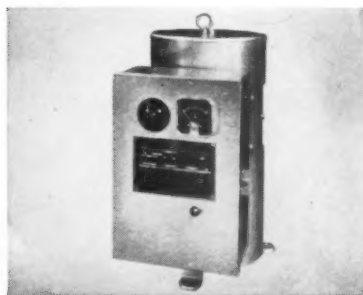
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